A COLLECTION OF GEOMETRICAL & ASTONOMICAL PROBLEMS.

ASTRONOMY
MATH.
GEOLOGY

written 1724, see pp. 201, 334

Lightning 95

Sign. 1730

Lib: Sloane
1930

An Index to the Following Collections as Followeth.

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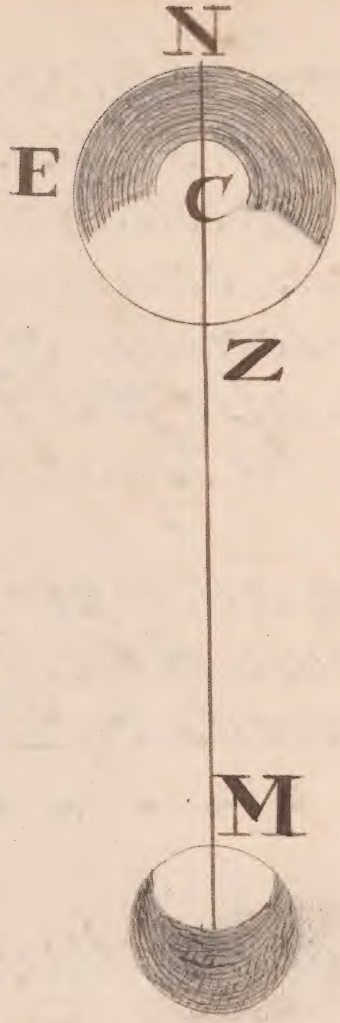
A Collection of Geographical Astronomical, and Astrological Problem's: Corrected from the Observations communicated to the Royal Societys, of London and Paris. also the Theory of the Tides from Sir Isaac Newton's Works.

Likewise an attempt to assign ye. Physical Cause of the Trade winds, and Monsoons; by Doctr Edm.d Halley.

Collected at his Majesties Royal Fort of Duncanson Decemb.r 1723. By the Honourable Brigad.r Gen.l Rob.t Sleurne and Gov.r of the Said Fort.

(2.)



The demonstration of this Figure is as Followeth (viz) x x x x x x

The Theory of the Tides From Sir Isaac Newton's Phil. Nat. Princ. Math. x x x x x x x x x x x x x

If the Earth were not affected by the actions of the Sun and moon, ye Ocean being equally pressed by the force of gravity towards the Earth's Center. would continue allways at the same height, and neither Ebb nor Flow: but it being here demonstrated that the Sun and Moon have alike principle of Gravitation towards their Centers, and that the Earth is within the activity of their attraction which decreases as the Square of the distance Increases from their Centers; By this Hypothesis and the annexed Figure (where M is the Moon, E the Earth, C its Center and Z the place where the Moon is in

In the Zenith, N wherein ye nadier) it is Evident that the water in Z being nearer, is more drawn by the moon, then the Center of the Earth C is, and that again more then ye water in N: wherefore the water in Z hath a tendency towards the moon, Contrary to that of Gravity being Equal to that Excess of ye Gravitation in Z above that in C: and in the other case, the water in N, tending less towards the moon than the Center C, will be less prelsed, by as much as is the difference of the Gravitations towards the moon in C and N.

This rightly understood, it Follows plainly, that the Sea, which otherwise would be Spherical, upon the Pressure of the moon must form itselfe into a Spheroidical or oval

figure

Whose longest Diameter where the Moon is vertical, and shortest where shee is in the Horizon: and that the moon shifting her Position as shee turns round the Earth once a Day; This oval of water shifts with her, occasioning thereby the two Floods and Ebbs observable in Each Twenty four hours.

The Spring Tides upon the new & full moons, and neap Tides on the Quarters, are occasioned by the Attractive force of the Sun in the new and full, Conspiring with the attraction of the moon, and producing a Tide by their united Forces: whereas in the Quarters the Sun raises the Water, where ye Moon depresseth it, and ye contrary; so as the Tides are made only by the differance of their Attractions.

That the force of the Sun is no greater in this case, proceeds from the very Small proportion the Semidiameter of the Earth bears to the vast distance of the Sun.

It is also observ'd that (Cæteris Paribus) the Equinoctial Spring Tides In march and September, or near them, are the highest, and the neap Tides are the lowest: which proceeds from the greater agitation of the Waters, when the Fluid Spheriod revolves about a great Circle of the Earth, than when it turns about a Lesser Circle; it being plain, that if the moon were constituted in ye Pole and there stood, that ye Spheroid would have a fixed position, and that it would be always high-Water under the Poles,

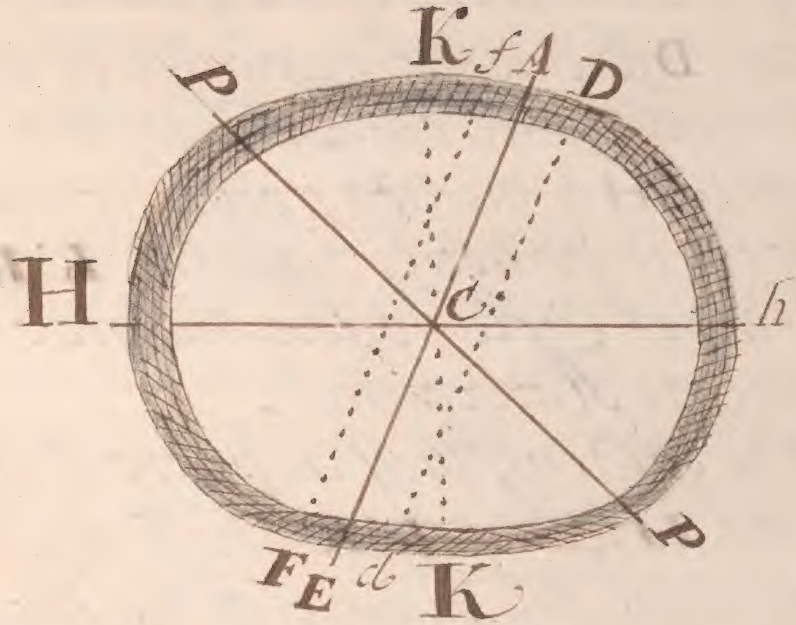
And low water every where under the Equinoctial: and therefore ye nearer the moon approaches the Poles, the less is the agitation of ye Ocean, which is of all ye greatest, when the Moon is in ye Equinoctial or farthest distant from ye poles.

Whence the Sun and Moon, being Either conjoined or opposite in the Equinoctial, produce ye greatest Spring Tides: and ye Subsequent Neat Tides, being produc'd by the Tropical moon in the Quarters, are allways the least Tides: Whereas in June, and December, the Spring Tides are made by the Tropical Sun, and Moon, and therefore less vigorous; and the Neap Tides by the Equinoctical Moon, which therefore are the stronger:

Hence it happens, that the difference between the Spring and Neap Tides in these months, is much less considerable than in March and September.

And the Reason why the very highest Spring Tides are found to be rather before the Vernal, and after the autumnal Equinox, viz. In February, and October, than precisely upon them is, because the Sun is nearer the Earth in the Winter months, and so comes to have a greater Effect in producing the Tides.

Hitherto we have considerd such affection's of the Tides as are universal; without Relation to particular Cases: w.t follows from the differing Lattitudes of places will be Easily understood by y.e following Figure.



The demonstration of the Figure is as Followeth, viz.

Let A p E p be the Earth covered Over with very deep Waters, C its Center, P p its Poles, A E the Equinoctial.

If the Parralel of the Lattitude of a place, **D**d another parrallel at equal distance on the other side of the Equinoctial, **H**h the two points where the Moon is Vertical, and let **K K** be the great Circle where the moon appears Horizontal.

It is evident, that a Spheroid described upon **H**h and **K K** shall nearly Represent the Figure of the Sea, and **C**f, **CD**, **CF**, **C**d shall be the heights of the Sea in the places f **D**, **F**, d, in all which it is high Water: and seing that in Twelve hours time, by the diurnal Rotation of the Earth, the point **F** is Transferr'd to f, and d to **D**: the height of the Sea **CF** will be that of the high Water when the moon is present, and **C**f that of the other high Water, When ye Moon is under the Earth:

Which in the case of this Figure is less than the former **CF**, and in the Opposite parallel **D**d the contrary happens.

The rising of the water being allways Alternately greater and less in Each place, when it is produc'd by the Moon declining Sensibly from the Equinoctial; that being the greatest of the Two high-waters in Each Diurnal Revolution of the moon wherein Shee approaches nearer to the Zenith or Nadir of the place: whence it is that the Moon in the Northern Signs, in this part of the World, makes the greatest Tides, when above the Earth, and in the Southern Signs, when under the Earth, the Effect being allways the greatest where the Moon is farthest from the Horizon, either above or below it.

But the motions hitherto mentioned are some what altered by the Libration of the Water, whereby, tho' the Action of the Luminaries should Cease, the flux and Reflux of the Sea would for some time Continue: This Conservation of the Impress motion deminishes the differences that Otherwise would be between two Consequent Tides, and is the Reason why the highest Spring Tides are not Precisely on the new and Full moons, Nor the neaps on the Quarters; but generally the are the Third Tides after them, and sometimes latter..

All these things would proceed regularly if the whole Earth were Covered with Water very deep; but Interposing continents, Straits, and the Shoalness of the Sea in Some places cause the Exceptions we See

From these General Rules, viz.) that in the open Ocean the time of high water is not at the moons Appulse to the Meridian, but allways some hours after it, as it is Observ'd upon all the west Coasts of Europe, and Africa, and the West side of America where a South west moon makes high water, and hence Lakes such as the Caspian Sea, and Mediteranian Seas, such as the black Sea, the Straits and Baltick, have no sensible Tides: for Lakes have no communication, with the Ocean, can neither Increase nor deminish their water, whereby to rise and fall: and Seas that Communicate by such narrow Inlets, and are of, Immense or Extent, cannot in a few hours time receive or empty water enough to raise or sink their surface any thing sensibly. x x x x

Lastly to demonstrate ye Excellencie of this Doctrine, the Example of the Tides in the Bay of Cochinchina, or Tonquin, which are so extraordinary, and differing from all others we have yet heard of, may suffice.

In this Bay there is but one Flood and Ebb in 24 hours: and twice in Each month, viz) when the moon is near the Equinoctial there is no Tide at all, but the Water is stagnant; but with, the moons declination there begin's a Tide, which is greatest when Shee is in the Tropical Sign's: only with this difference, that when the Moon is to the northward of the Equinoc. it flows when Shee is above the Earth, and Ebbs when Shee is Under, so as to make high water

Water at moons setting, and low water at moons rising: but on the Contrary, the moon being to the Southward, makes high water at rising, and low water at setting: it Ebbing all the time she is above the Horizon.
As may be seen more at large in the Philos. Transact. N° 162. the cause of this odd appearance is propos'd by Sir Isaac Newton to be from the Concurrence of two Tides: the one propagated in six Hours out of the great South Sea along the Coast of China: the other out of the Indian Sea, from between the Islands in 12, hours, along the Coast of Malacca and Cambaida.
The one of these Tides being prop-
-es'd in North Lattitude, is, as has been said, greater, when y.e moon

Moon being to the north of the Equator is above the Earth, and less when Shee is under the Earth.

The other of them, which is propagated from the Eastern Ocean, being raised in South Lattitude, is greater when the Moon declining to the South, is above the Earth, and less when Shee is under the Earth: So that of these Tides, alternately greater and lesser, there comes allways Successively two of the greater, and two of the lesser together every day: and the high water falls allways between the times of the Arrival of the two greater Floods; and ye low water between ye Arrival of the two Lesser Floods.

And the Moon coming to the Equinoctial, and ye alternate

Floods becoming equal, ye Tide ceases and the water Stagnates: — but when Shee has passd to the Other Side of the Equator, those Floods which in the former order were the Least, now becoming the the greatest, that which before was the time of high water, now becomes the low water, and the Converse.

So that the whole appearance — of these strange Tides, is without any forcing naturally deduced from these principles, and is a great — argument of the certainty of — the whole Theory. + + + + + +

Of the Quantity of vapour Exaltted from the Sea, of its Circu-lation and of the cause of Springs. Extracted from a discourse published in the Philosoph. Tran-sact. N.° 189. 192. writt by D.r Edward Halley. × × × × × × ×

From Five Experiments there ment-ion'd to have been made, it appears that y.e Sun and winds cannot raise less, than $\frac{1}{10}$ of an Inch from the Surface of the Sea each day in Vapo-urs; upon this supposition, Every 10 Square Inches yields a Cube Inch of water in a day, each Square foot half a wine pint, Every 4 Foot Square a Gallon, a mile Square 6914 Tons, a square

Degree suppose of 69 English miles 33 Milions of Tons: and if the Mediteranean be estimated at 40 Degrees long and 4 Broad, it will be 160 Square degrees of Sea, and Consequently will loose in Vapour 5280 Millions of Tons in a Day.

The mediteranean receives these Rivers the Ebro, Rhone, Tiber, Po, Danube, Neister, Nieper, Don and ye Nile; We will suppose Each of these Nine Rivers to bring down 10 times as much water as the Thames (not that any of them is so great; but so to allow for the Smaller Rivers Runing into the Sea) i.e. from a Calculation there made 1827 Millions of Tons in a day will be brought into the Mediteranean by ye Rivers runing into it, which is

Little more than ⅓ of what is proved to be raised in vapours from that Sea in that time, one part of the remainder falling back again into the mediteranean in Rain and dews; and the remaining part is supplied by the Current Constantly setting in at the straits of Gibralter: hence likewise appears the reason of the Caspian Seas never Over flowing, tho' it receives so many large Rivers and Sends forth none, as much being Carried up vapours as is supplied by y. Rivers.

Now if an Atom of water were Expanded by heat into a bubble 10 times as big in Diameter as when it was water:

Such an atom would be Specific-ally lighter than air, and rise cont-inually till the warmth declining, and the air growing Coöler and with all specifically lighter, the Vapours consequently shall stop or descend at a certain Region of the air.

Next consider the Earths Surface as Interspersed with high Ridges of Mountains, to which when the Vapours are carried by ye wind, they are compel'd by the Stream of air to mount up with it to ye Tops of the mountains, where being precipitated by the cold it gleets down by the Crannies of ye Stone, and uniting, Forms Single springs the union of Several of which forms Rivulets, many of which Joyning from such streams as the Rhine

Rhine, the Danube, &c.ᵃ which latt.ᵉ one would hardly think y.ᵉ Collection of waters Condensed out of vapours unless we consider how vast a tract of Ground that River drains, In proportion to which, and for the aforesaid Reason we find Rivers great or small.

From this Hypothesis likewise appears the final cause of Hills, which serve for Alembicks to distill fresh water for the use of man, and Beast.

Here Endeth the demonstration of the Second Figure, Relating to the Theory of the Tides, &c.ᵈᵉ

An attempt to assi-gn the Phisical cause, and of the Trade winds and Monsoons by Dr. Edm. Halley

(24)

A trade wind is Constant, blowing allways from the same point with little alteration.

A Monsoon is periodical, blowing one half year one way, and the other half the Contrary.

the limits of these winds are to the Lattitude of 30 nearly, on Each side of the Equinoctial line, in wh. Space the darts in y. map point to the place to which y. wind blows.

(Q.) air less Rarified or Expanded by heat, and consequently more ponderous, must move towards those parts, wh. are more rarified and less ponderous, to bring it to an Equilibrium.

(2) The ☉ of the Sun continually shifting to the westward, that part toward which the air Tends, by reason of the Rarifaction made by the greatest Meridian heat, is with him Carried westward, & consequently the tendency of the whole body of the lower air is that way.

Thus a general Easterly wind is form'd, which being Imprest upon all the air of a vast Ocean, the parts impel one the other, and so keep moving till ye next return of the Sun, whereby so much of the motion as was lost, is again restored, and thus ye Easterly Wind is made perpetual, likewise near the line the air is much more rarified, than at a great dislance from it, because ye Sun twice in a

Year —

year vertical and never distant above 23, degrees 30 Minutes. wherefore to the northwards and southwards being less than that in the midle, it must on both sides tend towards the line: this motion compounded with ye former Easterly wind answers all ye Phenomena of ye General trade winds; which if the whole surface of the Globe were Sea, would undoubtedly blow all round ye World, as y^e are found to do in the Atlantick and Ethiopick Oceans.

But seeing so great continents break the Continuity of the Oceans, regard must be had to ye nature of ye Soil & the position of ye mountains: for if a Country lying near ye Sun prove flat, and Sandy the air there being Exceedingly Rarified by the

Heat occasion'd by ye reflection of ye Sun-beams, and the Retention there-of in the Sand, the Cooler & denser air must run thitherward to restore the Equilibrium: this I take to be the Cause, why near ye Coast of Guinea the wind allways setts in upon the land, blowing westerly Instead of Easterly: from the same cause it happens, that there are so constant calms, in that part of ye Ocean Called the Reins, near the Cape vird Islands, for lying between the westerly winds blowing on the Coast of Guinea, and the Easterly Trade winds, the air here stands in Equilibrio: and ye weight of the Incumbent Almosphere being deminish'd by the continual contrary Winds blowing from hence is the Reason that ye air here holds not ye

The copious vapour it receives, but lets it fall in frequent Rains.
But as the Cool, dense air, by reason of its greater gravity presses upon y.e hott & rarified, this latter must ass.d-end, as it rarifies, and disperse it-self to preserve the Equilibrium: that it is by contrary Currents the upper Air must move from these parts where the greatest heat is; so by a kind of Circulation the North East Trade wind below will be attended with a South westerly above, and the South Easterly below with a north west wind above; w.h solves y.e Phenomenon of y.e monsoons otherwise hardly Explicable.

Supposing therefore such a Circulation as above, 'tis to be considered

That to the northward of ye Indian Ocean there is every where land within the usual Limits of the Lattitude of 30 degrees, viz. Arabia, Persia, India &c. which for ye Same Reason as the In land parts of Africa, are Subject to unsufferable heats when the Sun is to the north, passing nearly vertical; but yet are temperate enough when the Sun is removed towards the other Tropic; because of a Ridge of mountains at Some distance within the land said to be frequently in Winter Covered with Snow, Over which ye air, as it passes must be much Chill'd. Hence it comes to pass that the air coming according to the General Rule out of the **N.E.** in the Indian Seas, is Sometimes hotter, Sometimes Colder, than that which by this

This Circulation is Return'd out of the **S.W.** and by Consequence sometimes the under Current, or wind is from the **N.E.** sometimes from the **S.W.**

Remarks on Senex and Maxwells Mapp of the World. + + + + + +

This way a north west passage to China, has severall times been attempted with out Success. In the 70 Degrees of North Lattitude. + + +

These parts being as yet undiscovered, tis not Certain whether America Joins to the north Eastern part of Tartary, whence it is most probable that it was peopled, being supposed to be seperated if at all by a Narrow Straits. + + + + + + +
lying in 50 Degrees North Lattitude.

This Coast is laid to be discovered by Dom Jean de Gamaina in a Voyage he made from China to

New Spain. this lying between 40. and 45 degrees of North Latt.

These curve lines which Express ye variation of the magnetical Needle were Observed to be by Dr. Edward Halley for ye. Year 1700. but it must be noted that there is a perpetual, tho' slow change in the variation allmost every where (viz) about C Bona Esperance the N. variation Increases about a Degree in in Nine Years, in our Channel a deg. in 7. Years, on the Guinea Coast a Degree in Eleven or twelve Years, on the America side the Nest variation alters but little; and the East variation on the

34) The South America side decreases the more Southerly the faster; the line of no variation moving gradually towards it. ~ ~ ~ ~

These faint lines and arrows ~ Interspersed between the Lattitudes, of 30 degrees North and South In both Hemispheres, denote the Limits and Course of those perpetual winds called Trade winds, the Feather and pointing from whence the wind comes, and the Dart and weather it blows, the arrow Flying before ye wind.

The Caribbe Isles in or near the Month of august, are dreadfully afflicted with furious Storms ~ call'd Harricanes, which are

as it were Peculiar to them. these Isles lying in the Lattitude of about 15. degrees, in North Latt.

The Bahama Isles are reconed about 400, descovered by Columbus in the Year 1492. lying in the Lattitude betwixt 25, degrees & 30 North Lattitude. 2 + + + +

The Philipian Isles are Computed about 11000, they were first discovered by magellan in the Year, 1520. these Islands lying In the Lattitude of about betwixt 15, and 20 degrees North Latt.

South Lattitude. beginning first with the Pacifick Ocean.

according to the Report of those who have crossd this Vast Ocean, the winds have a great Conformity with those of the Atlantick, and Ethiopick, and that on both sides the line with so much constancy, that the Seaces Ever need to attend the sailes, and strength, that it is rare to fail Crossing it in Ten weeks time w.ch is about 130 Miles P. Diem; besides 'tis said that Storms and Tempests are never known in those parts: wherefore some have thought it might be a short Voyage to Japan, and China, to go by the Streits of Magelan, as by the Cape of good hope: + + + + + +

Mardelzur.

Is the line of no variation that pass as near ye Coast of China, divides again the West from the East Variation that in all probabillity is to be met with almost all over this Immence Ocean; but have not attempted to describe the Curves therein, wanting Accompts, and Journals to Ascertain the Same.

• This point is Opposite: or, antipodes to London. + + + + + +

The Ice Sea. In this Sea are many Animals partly resembling a Fish, partly a fowl, having a Neck like a Swan which they Often thrust above Water.

The rest being allways under.
These three last lying in the
Lattitude of betwixt 50, and 60
Degrees of South Lattitude.

The Antarctic Circle.
Because of the much greater Cold &
the Seas being more frozen towards
the South than north pole, discover-
-ies have not been made so far to
the Southward as to the northward
but open Seas are never known
to be frozen, only the Borders
near the land thro' the great
Quantity of fresh water brought
from the Land: whence it may
reasonably concluded that there
lies much more Land, tho' less
discovered about the South pole
than the North pole; that more

discoveries have been made to the Northwards proceeds likewise from the discoverers living nearest that Pole. From the Lattitude 67 to the Lattitude 90. the antarctic pole.

The Shifting of these contrary winds called Monsoons, is not all at once, but sometimes is attended wth. Calms and variable Winds, and sometimes with violent Storms that seem to be of the nature of the west-India Hurricanes. these tempests are by the Seamen - term'd the breaking up of the Monsoons.

New Brittain discovered 1701 in the Lattitude of betwixt Equinox and 10 degrees South Lattitude

The Soil of Hollandia Nova is barren and desert, no fresh but some salt water Rivers, no fourfooted Beasts excepit an Amphibious one as big as a Dogg, with Sea Cows and an Innumerable Quantities of Ratts as great as Catts, allso black Swains and parots; the natives are black and go naked; the Coast is Low foul and rocky the Inland parts high here abound Oysters, Lobsters & Crabs, and vast numbers of troublesome Flies. In the Latitude betwixt 20 and 25, Degrees South Latt.

De witts land discovered 1628.

Land of Endracht discovered 1616.

Lewins Land discovered 1622. ~

P Nuyts discovered 1627. both these lying in the Latt of about 30. ~ Degrees South Lattitude. + + +

Herodotus the historian relates ~ that Necus King of Egypt (2200 years since) having Finish'd Certain Phenicians with Ship's. these Setting Sail from the Red Sea and Coasting along africa doubled ye Cape of Good hope, and after two years Spent in ye voyage Enter'd the Straits of Gibral-ter in ye 3. Herod. lib. 4. ~ ~

Eastern Ocean.

In this Indian or Eastern Ocean after you pass Madagascar, ye Westerly variation was in y^e

year

Year 1700, on the decrease, the faster & more westerly & southerly; and it was then in a manner at a stand when you came to the Length of Java, this Eastern Ocean Lying in ye Lattitude of about 30 Degrees South Lattitude. &c

Van diemens Land discovered 1642.

By the variation of the Magnetical needle or mariners Compass is meant its deflection from the True Meridian, for it has been observed that there are but few places that there are a direction true north, but varies therefrom Eather to the Eastward or westward, in some places more in others less: now this variation

Is of that great concernment In the art of Navigation, that the Neglect thereof, does little less then render useless one of the noblest Inventions mankind Ever yet attained to, for which Reason we have here Inserted them in the Map as they are found by Dr Halley in y. Year 1700 the Curved lines passing over those places, whose Degrees of Variat-ion are superscrib'd.

A Mapp of the World, Corrected from the Observations Communicated to the Royal Societys of London and paris, by John Senix and John Maxwell. Dedicated to the Rt. Hon.ble Rich.d Boyle, Earl of Burlington & Corke &c.c

(44)

How to make an Horizontal Dyal by this little Table.

Note this Table shews the distance of the Hour lines from the Meridian; for an Horizontal Dyal in these following degrees of Lattitude. (viz)

Latt.	50		51		52		53		54		55		56.		Latt
Hrs	D.	M	D.	M	D.	M.	D.	M	D.	M.	D.	M	D.	M.	hours
1	11	36	11	45	11	55	12	05	12	13	12	32	12	39	11
2	23	51	24	09	24	26	24	44	24	59	25	18	25	33	10
3	37	27	37	50	38	13	38	36	39	3	39	18	39	38	9
4	52	58	53	22	53	44	54	7	54	26	54	47	55	6	8
5	70	41	70	56	71	9	71	25	71	30	71	51	71	2	7

Demonstration

First set one Foot of your Compasses upon the beginning of the degrees of the Quadrant, and extend the other Foot to 60 Degrees, with that distance describe a Circle on Paper.

Then Cross that Circle thro' ye Center, or point E which the line D, E, C, In the Dyal, for the Meridian, or 12 a Clock line, and Cross that line at right angles; for the 6 a Clock Line, as the line A B in ye Dyal. Then Consider what Lattitude; or height of the Pole you draw the Dyal for; which is this; or, which is to be for the Lattitude of 52 Degrees.

Look 52 on the Top of the Table, (against which is Set Lattitude for Lattitude) under which you will find 11 Degrees 55 Minutes, for the distance between Eleven and one a Clock, (as you may on Each side the Table, against hours for hours) which distance take of the Edge of the Quadrant with your Compasses, and set it of from the 12 a Clock line at C in the Circle or Arch, both ways.

Next, take of 24. Degrees 26. Minutes as you will find in the Table, for 2. and 10, a Clock, and set it of from C, (as in the Dyal) in the Arch or Circle, and from thence draw hour lines to the Center E, or very near, and so of the Rest.

And when you come to the hour of 6, you may draw the remain.^g Hours above the 6, a Clock line, as 4, and 5, and 8, and 7, by laying a Ruler through the Opposite hours.

Lastly, the Stile, or Cock, or Gnoman (according to the Lattitude) 52 Degrees, or according to the Lattitude of the place where you dwell, which I shall show here after.

Note. that if your Dyal is large, after you have Divided the hours into Quarters, you may Divide Each Quarter into 15, for ye minutes, by Dotts, one white and ye other Black, So will Each hour be Divided into 60, Minutes.

How to fix any Dyal &c. Exactly North, and South.

Fix a Board, or Trencher Exactly Level with the Horizon, and in the the Compasses draw Three or Four Circles one within another, about half an Inch asunder. Then set up a pin in the Center upright, and in the Forenoon mark upon one of the Circles that the pin's head Shades in y.e Sun shine, and in the afternoon when the Shade of the pin's head comes upon the same Circle, make a mark also.

Then divide y.e distance between these Two marks with y.e Compasses equal upon the same Circle and make a point.

Lastly, from the midle point, or mark in the Circle draw a line thro' the Center or place where the Pin's head was set, which line is the Meridian, or 12 a Clock line for all the Year, (which will show 12 a Clock all the Year if the pin stands there) upon which line you may place you may place your 12 a Clock line of ye post Dyal that side nex^t^ the South, where is writen South in the Dyal Insuing: or placed on another post; when ye pin's head shades that line any other day; also you may Cut a Knoch upon your window Board at y^e^ same time from y^e^ Shadow of a Stanshan which will show mid Day all the Year, when y^e^ Sun Shines on it at Noon.

A Horizontal plain Dyal.

(52.)

How to make an Erect direct South Dyal.

For a South dyal.

Lat.	50		51		52		53		54		55		56.	Lat.
hor.	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	M.	D.	M. hor.
1	9	47	9	34	9	22	9	9	8	57	8	44	8	31 11
2	20	21	19	56	19	33	19	8	18	44	18	18	17	52 10
3	32	44	32	8	31	36	31	1	30	27	29	49	29	11 9
4	48	4	47	24	46	48	46	10	45	29	44	48	44	3 8
5	67	20	66	52	66	26	65	56	65	27	64	53	64	20 7

You may make by this little Table as is thus showed in y.e Horizontal Dyal before, Observing the Following Figure, but whereas the Stile of the Horizontal, is 52 Degrees, you may take the other part of the Quadrant for the height of this Dyal (viz) 38 Degrees, from y.e Quadrant and set it of in the — said arch.

Likewise this being to be placed on y.e South side of an house, y.e — same Dyal may serve for the — North side of an House, turning the Figure 12. upwards and the Line mar'd 7, be now mark'd 5. and the line 8. with 4. the line 5 with 7, and the line 4. with 8; all other hour Lines in y.e North

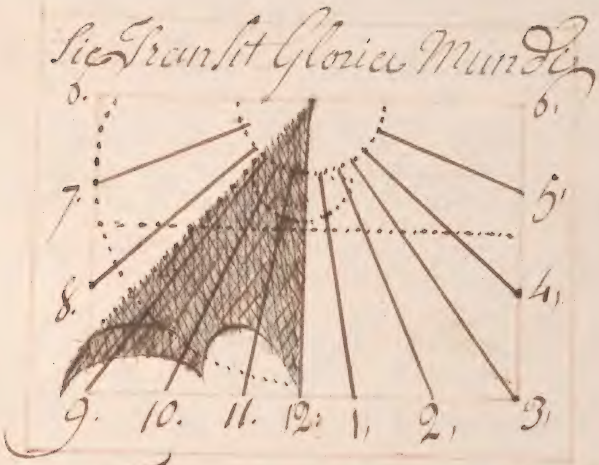
Dyal—

are useless, because the Sun in our Latitude, shines on a North wall the longest day, only before 6 in the Morning, and after 6 at Night.

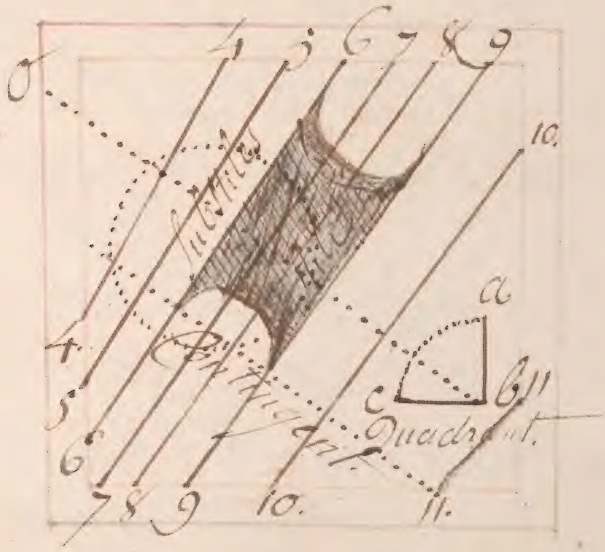
Note, that every Dyal hath a Center, the Stile points towards the said North pole Starr, and the other End towards the South pole Starr, (as supposed Axtree from the one to the Other; about which, the Sun, Moon, and the whole course of the Starrs are said to move in 24. hours.)

(56.)

An Erect direct South Dyal.



The true Form of an Erect direct East Dyal.



(58)

First, on Paper with the Compasses make a Quadrant, or quarter of a Circle, as the Quadrant A.B.C in the Dyal but much longer, divide the arch A, C, thereof with the Compasses first into three parts, & each part into three, makes 9 parts, or 90 parts or Degrees. let the side C.B, be Level with ye Table, and the arch beholding the South, number therein the Elevation, or height of ye pole Starr from A, towards C (according to the Lattitude you dwell in) as suppose 52 Degrees, wch may Indifferently serve most places in Ireland; or England without any great, or Apparent Errour, at the End of that number, or Degrees from the Center.

Center of the Quadrant at B, draw a line so long as the Plane, or paper (on which you draw) or will give you leave, which in the Dyal is noted B, O, than upon any part of the line B, O, describe a Circle, and in the Center of which draw a line square wise, to the said line B, O, for the 6a Clock line: next at the out side of the Circle draw a Contingent Line, Parralel to the line B, O, which are both dotted lines, as you may see in the foregoing Dyal.

Next Divide that halfe Circle next the Contingent line into 12 Equal parts.
next, lay a Ruler upon the Center of the Circle, and to each mark, or Division, made in y.

The Circle (or half Circle) drawn lines with the point of the Compasses by the Ruler, and where the Lines Cut the line of the Contingent there make marks.

Next from the marks made in the Contingent draw lines, parrallell to the line of 6 a clock, as you may see in the Dyal:

Lastly fix the Stile upon the 6, a Clock line Square wise to the plane, or Dyal, Whose height is to be halfe the breadth of the Circle, the outward Edge to be Parrallell to the hour lines; and may be made of Tin, Brass, or wyer, Remember its best to draw your Dyal on Paper, & the paper fixed to the Wall, thro' which make marks; let your plane be never so big.

Sixly, you may extend the hour lines at what length you please, (viz) for the Horizontal, a South Dyal, but not of your East or West;

Note, whereas this Dyal serveth only for your East, but if you desire to make a West Dyal, it is but taking your East Dyal already drawn upon paper, & lay the face thereof to a glass Window, and draw the same lines on the back of your paper Dyal, so you may have an East Dyal on the one side of the paper, and a West Dyal on the other side, having first set figures at the Ends of the Lines; (that is) Instead of 11, 10, 9, 8, 7, 6, &c in the East Dyal,

you may set against the same hour lines on the West Dyal 1, 2, 3, 4, 5, 6, 7, &c

Note, that you are to place no lines on your East, or West Dyal, besides your hour lines; and if you have an East, or West Window; you may with Gum Stick one of those paper Dyals on the Inside of the Glass, in a Quary, Putting a Wyer on the Outside of the Stile; thus you may Learn without a Teacher, after you are perfect In Vulgar Arithmetick, and likewise Decimal Fractions; and Trigonometry, plain and Spherical; and use of the Globes; only Authors as I have done.

How to make a Reflecting Dyal on ye Ceeling of a Room.

First take a piece of looking Glass about the bigness of a six pence and Rub that side that is to lye downward upon a Grind Stone, to prevent ill cutting of Two Spots on the Ceeling; then Cut a hole in the bottom of the window, close to the Glass, (or at the Opening of the Casement) where the Sun Shines most, and Set in the Glass even with the Top of the Wood, and Fasten it with Linseed Oyle, Tempered with Soot, or other Colouring being warm; then nail a piece of Tin, or the like, with a hole in it, over the Glass, that it may not Stir at any time; The Glass being

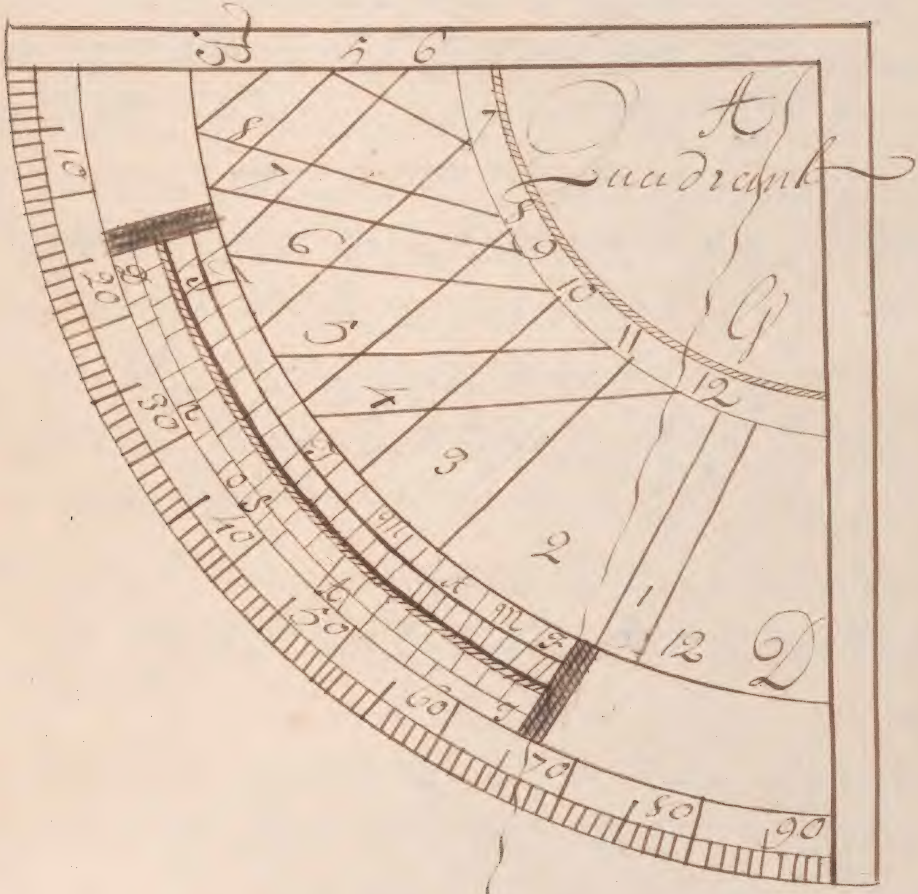
fixed, the Cyl being Drye, mark upon the Ceeling at every hour, where the Spot of the Sun from the glass touchetth, (by another Sun Dyal in the Sun) if y^u have set a mark for Each hour that Day; about Six weeks, or more after that, mark upon the Ceeling as you did before; then from the Two marks for Each Hour, Draw lines at Length; by Two persons holding a Thread; which Thread you may Brush Over with a pencil, diped in Ink mixed with Foot.

Note, that by the Observation of making Twice for Each hour line, you may draw a Dyal from the Shadow a great nails Head, or other thing driven into

into a wall, and that if the wall be uneven, or Ceeling un=-even; you ought to make your Observations the oftner.

Thus I have given you an Idea and discription of the five several sorts of Dyals, which I shall leave to the Candid Readers Censure.

The use of the Gunters Quadrant is as Followeth.



(68.)

The discription of the Quadrant.

First, the outward arch, or Edge is Divided into 90 Degrees called parts. Secondly, above the Figures 20, 30, 40, 50, 60, is set Letters, for the 12 Months, beginning at the left hand where is the Letter I, for January, Next that is the Letter F for February and so on to June; and at July the Lowest Letter you must go back again, to A for auguist, S for September, and so on to D, for December, Each supposed to be divided Into 30 parts, for the days in Each Month,

Thirdly, upon the line G, D, fix Two pieces of thin Brass, with a hole in Each, called Sights, or drive Two Little nails without heads, (if you make a Quadrant of Wood) that one may shade another, that is,

That is, from G, towards D, may shade another, when you hold the Quadrant in the Sun Shine, to know the hour of the Day, &c.

lastly in the Center A, let a Thread or Silk be fastned in a little hole, and a plumet of Lead at the other End, and put on ye Silk a pin's Head, or a Small Bead.

How to know ye hour of the day by the Quadrant.

First, lay the Silk, or Thread streight over the day of the month, and so hold it, till you slipp ye Pinn's head, to rest over one of the twelve a Clock lines; this done, let the Sun Shine from the Sight at G, to the other at D, (the Plumet hanging at Liberty) the Pin's head,

Head will rest against an hour line that directs to the hour of the Day.

How to know by the Quadrant whether the Top of the post, on wch you intend to fix an Horizontal or post Dyal, be exactly Level or No.

Lay a Ruler on the post, I mean on the Top of the post, and aplie the Edge of ye Quadrant G, D, to the under side of the Ruler, so that the Plumett may hang over the line A, B, of the Quadrant; and if it fall directly upon ye Level line A, B, making no angle, it is a true Level, but try an upright wall, to place a Dyal thereon hold the Edge of the Quadrant A, B, against the wall, and if ye thred and plumet fall directly on the said Level line A, B, at ye Enter-ance of the Degrees, it is an

An upright wall, and neither Inclines, nor Reclines

How to take the height of a Tree, or Steeple by ye Quadrant.

Hold up the Quadrant and Spie through the Sights, or along the Edge D, G, the top of the Steeple, Steping backwards, or forwards till the plumet hangs against 45. Degrees, (that is at the midle of Quadrant) the plumet hanging at Liberty; then is the height of the Steeple Equal to ye Distance of the Bottom thereof to your Standing, to which add, ye height of your Quadrant from ye Ground which distance measure into Feet and Yards.

But if the plumett cut one Quarter of your Quadrant, or,

Or, 22 Degrees and an halfe in taking of sight, then twice the Distance from your Standing, to the bottom of the Steeple, or Tree is the height.

Lastly, if the plumet cut $\frac{3}{4}$ of the Quadrant (or 72 Degrees $\frac{1}{2}$) then half that Distance is the height.

Note, that in taking of heights, when the Sun Shineth (is thus) that if you find the Sun's height by the Quadrant, 45 Degrees, then y. Shadow of that Steeple is Equal to the height; if 26 Degrees 5 Minutes the Length of the Shadow is double to the height; at 18 Degrees 43 Minutes, it is Three times; at 14 Degrees 4, Minutes it is 4, Times; at 11 Degrees 31, Minutes, the Shadow is Five times y. height of the Altitude.

How to take a long distance y.
you cannot measure to, by
Reason of Water.

First, observe the Following Figure,
and let C be your standing place
and let E be the castle, or mark-
-ear off, whose distance from
C you would know.
Then walk right forward from y.
standing a C, towards E, any
number of Yards, or Perches; as
suppose 50, to A, where set a staff.
then move in a Perpendicular
Line to C, E, from A to B, mak-
-ing a right angle at A, any
Distance, suppose 66, and Sett-
up another staff at B, then
come back againe to C, and rem-
-ove in a perpendicular Line to
C, E, till you see the mark

set up at B. and the point E in a right Line, and set up another staff at that place at D, getting the Exact distance thereof from C, viz. suppose 76, then substract A, B, 66, from the measure Distance C, D, 76, and note Remainder which is Tenn.

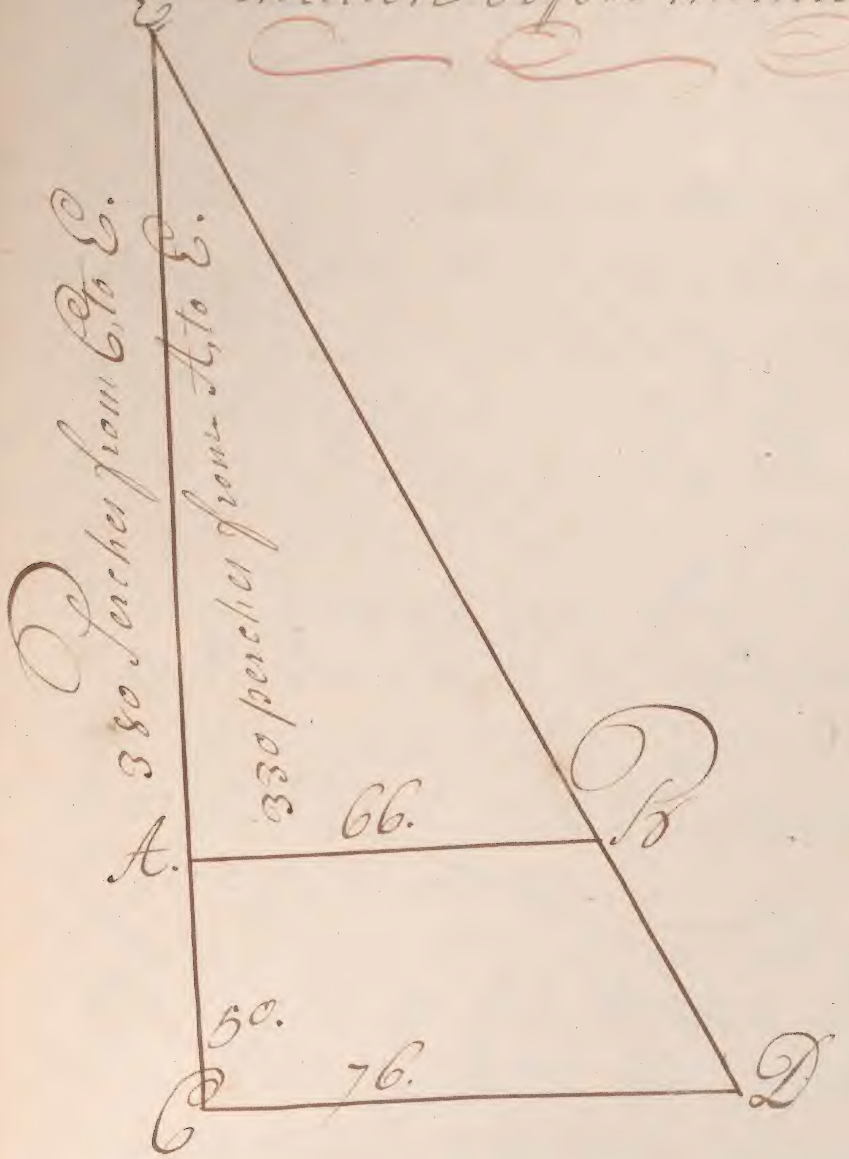
Then say by the Rule of Three, as 10 is to 50, so is 66, to 330. & x

50
33 0/0 Perches from A. to E.

Or as, 10 to 50 so is 76 to 380 so perches from C, to E.

(76.)

This Figure belonging to the Exp[lan]-ation before mentioned.



(78)

How to know the weather at all times of the Year, by the new and full of the Moon.

Be sure to Observe allways Three Days before the moon be at Full, whether Shee shine bright; and that the Clouds are not Scattered here and there in the Element; if not, then thou mayst Judge that it will be very fair; but if the Moon be dark, and Clouds Incompassing her about, then know that it will Rain much before four days,

When Fogs and mists do hinder the light of the Moon, it betokens that in Short time we shall have cold winterly Rain, or bad winterly weather: a Rain-bow is allways Sign of much Rain

Rain or winds to come suddenly, or else of much Rain or winds past. Having now done with y.e weather. I come to speak of the four Quarters of the Year.

The General disposition of y.e Year depends upon the four Quarters, Namely, Spring, Sumer, Autumn, and Winter.

Of the Spring

This Quarter begins the Fifth Day of march, at that time the Sun Enters the first Scruple of Aries, and continueth till y.e Sun hath past the Crab; or Cancer, w.ch is about the Eleventh or Twelfth of June; this Quarter usually is Hott and moist, but very uncon-stant in Either.

Secondly Summer.

Summer takes its beginning the Eleventh of June, upon the Sun's Entrance into Cancer, & continueth till the 12th. of September, in which time the Sun goes throughe one fourth part of the Zodiack Circle, Comprehending Three Signs in his progress, namely, Cancer, Leo, and virgo.
This Quarter is commonly hott and Drye.

Thirdly Autumn

Autumn beginneth about the Twelfth or Thirteenth of September, and Ends about the Eleventh, or 12th. of December, and Just so long

Long the Sun is running through Libra, Scorpio, and Sagittarie: the nature of this Quarter is Cold and Drie.

Fourthly Winter

Winter begins with us at the Sun's Enterance into Capricorn, and it lasteth to the Tenth day of March, in which time the Sun runs through the Three last Signs, Capricornus, Aquarius, & pisces: this Quarter is cold and moist accompanied usually with Frost and Snow.

Of the Winds

Experience teacheth us, that the Winds do Change and alter the Airs Constitution: by ancient Astrologers and Astronomers; the wind is thus described (that it is an Exaltation of hot and drye, drawn up into the air by ye power of the Sun, and by Reason of its Weight it is driven down, and side long it is Carried about the Earth.)

The Principal winds are four, as East, west, North and South; There are also other winds, as South East, and South West; North East, and North West. North winds, though the be Cold

Cold and drie, yet they are usually wholesome, and do much preserve things from Corruption: South — winds do much hurt, by their too much and frequent moistening ye Earth; they are also hurtfull and Obnoxious to Seeds, Fruits and — Living Creatures; this wind is hot and moist, it causeth a dark and Cloudy air, and is most times Accompanied with Rain, it stirs up many diseases through continuance, as feavours, and other Contragious griefs, which are hurtfull to humane Bodies:

West winds are Cherishing Plants, it is most temperate, & watery, stiring up Rain and Thunder.

The East-Winds are sometimes Temperately holt and drie, and sometimes Fiery & Cholerick;

It's pure Pleasant and wholesome, because it is contrary to all infection, and doth preserve the Body sound; this wind for the most part begins to blow at Sun rise, and ceaseth when the Sun setts.
as for the other winds they partake of the nature of these, as they more or less incline to the Quarters.

The measure of Time

This measure arisseth from minutes, of which 60 make an hour 24 hours a natural day, 7 days a week, 4 Weeks a month, 13 of which make a year, though it is divided, into 12 Equal

Equal Calender months, though varying in the number of their Days, according to these verses.

30 days has Fruit bearing September,
Wet april, dry June, & cold november,
and February Twenty eight alone,
Unless leap-year does add unto it one,
The Other months have 30 days & one

Leap year is every four years, & Consists of 366 days, when the Other are only 365.
The year is likewise divided into four quarters, as the Feast of the Annuntiation of the virgin Mary, called Lady day; being the 25th of March. St John the Baptist day June the 24th. or Midsummer day. St Michael the arch Angel, or Michael

Michaelmas day, September, ye 29th. The Feast of Christs nativity, or Christmas day, December the 25th. but by reason some Days there are that Change their Time of date, according to the Changing of the moon falling higher or Lower; as Shrove Sunday, Easter Day, Ascention Day, Whit-Sunday.

To know when the Four Terms begin and End for Ever, with their Returns, and Opening the Exchequer.

Hillary Term allways begins the 23^d of January, & ends ye 12. or 13th. of February, having four Returns.

Easter Term is moveable, yet all-ways begins 17, days after Easter, and ends the munday after Ascention day, & has 5. Returns.

Trinity Term is moveable, yet allways begins the Friday next after Trinity Sunday; and ends the Wednesday Fortnight ensuing, having four Returns.

Michaelmas Term allway begins the 23d of October, and ends the 28th of November and has Six Returns.

The Exchequer opens Eight days before every Term, but Trinity, and then but Four days.

Of the English computation, or Old Stile, and in difference from the new.

The annual computation of the Church of England is according to the Roman Kalendr reformd by Julius Caesar, and is therefore calld the Julian account.
He when dictator (43 years before the Incarnation) Observing the Inconvenience of ye Intercalary month (Inserted by ye Priests — though fit) year to supply the difficiency of ye common year by ye respect to ye Sun, by ye assistance of Sosigenes & other Learned — Astronomers, calculated a year Conformable (as was then thought Exactly) to ye Suns Tropical Revolution. This was done — (rejecting ye Intercalary month —

Months) by the addition of ten days to the former and six hours (Numa's) year. the days were thus disposed of, to 4 months January, July (then Sextile) and December, each three; to April, June, September, and November, each one. the six hours were not to be reckoned till every fourth year, when they make up an whole day, which day was ordered to be inserted betwixt the 24th & 25. of February; and because the 24 of February is the sixth Calend of March, & this and the Intercalary accounted but as one continued day, they are therefore both called Bisexto Calendas Martii: and hence also when this happens, the year is called Bissextile, or Leap year.

So that by this addition to to the former year, wch consisted only of 355 days, the Julian year contains 365 days and six hours.

Which has been found too large a Space for a Solar Year, and it is a thing impossible to Calculate a Year Exactly to the course of ye. Sun, by reason of its unequal motion from one point to ye. other; and therefore Astronomers have pitched upon a mide motion of the Sun betwixt its Slowest, and Swiftest annual Revolution, Computing it to contain 365 Days, 5 hours, 49 Minutes, less by 11 minutes than ye. Julian Year; which 11 Minutes in the Space of 133 Years make up a Day; So that should this mide Tropical Year, and ye. Julian Year begin together at noon, the 10th. of March anno 1700. in ye. Year 1833. the begining of ye. form would happen at noon, on ye. 9th. of March of ye. Julian Year.

In ye. Year 1966. or after 266 Years, it would happen on ye. Eight of ye. month, &c. proceeding by 133.

According to which difference the Vernal Equinox, that fell at the great Council of nice upon ye 21.st of march, was observed in ye year 1582. or about 1300 years after, to fall on the 11.th of that month; and thus gave occasion to ye Correction of the Calendar, and the Introduction of a new stile.

For Gregory 13. then pope of Rome, upon observing the year thus far to have gone backward, order'd Ten days to be cut of from ye month of october, by calling ye 5.th day thereof the 15.th and to obviate the like Inconveniencies for the future, it was then provided, that after the year 1600. in every 400. years succeeding three Bisextiles should be omitted; i.e. in the years 1700. 1800. 1900. but in 2000. and so every 400. year, the Bisextile (as in course) should be retained; because in 399 years

(according to this Hypothesis) tho' some will call it somewhat more the Julian exceeds this midle Tropical year but three days.
So that this present year 1700 wch is with us Bissextile, is not so with them which follow ye Gregorian account, or new stile; and hence their account which was formerly ten is now eleven before ours, for the begining of months, and for all fixed Festivals, but various (as the Moon) for all moveable feasts, the greatest distance being five weeks, as it will happen the next year.
This new account is observed in all nations that are in obedience to the See of Rome, and ye Old by such as have Rejected its Authority, Receipting Holland, and Zealand, and of late the Protestant Churches in the

The Palatinate; and were it not a seeming Compliance with the Popes decree, that Peremptorily Enjoins it to be universally Observ'd, no doubt other protestant Countrys would have admitted of it, which must be confessed to be far more Exact and regular than that we follow; though it would have been a more Correct Regulation for the Observance of Church Festivals had the Year been Reduced to the Order of Heavenly Bodys at our Saviours passion, whereas the Correctors went no farther backward than ye Church of Nice, Anno Domini. 325.

Of Earthquakes and causes of-
them.

The usually proceed from an-
abundance of wind, got into-
the corners and holes of the Earth,
which violently rushing out,
and the Earth closing again-
suddenly, causes a great shak-
-ing of Earthquakes.

Of thunder and lightning.

It is an Exhaltation, hot & drie,
mixt with moisture, it's drawn
into the midle Region, and
there inclosed in the Body of a
Cloud, now these two contraries
thus included together, beget-
Differance, and cannot be reco-
-neiled without breaking the
Prison wherein it is pend up,-

up. the violent rushing whereof makes a noise, which is called Thunder, and the fire lightning, being both broke so that at one Instant, though the lightning appear first in regard of the quickness of the Eye, the other taking a longer time to come to the Ear. x x x x x x x x

Of the four Elements.

First the Element of Fire, next the moon, and so downward.

Second the Element of air.
Third the Element of Water.
Fourth the Element of Earth.

Of the Four Complections.

The choleric hath nature of fire, hot and drie, and naturally is lean and slender, covetious, Ire-full, hasty brainless, foolish Mal-icious, deceitfull, and subtill where he applieth his witt. + +

The sanguine, hath nature of Fire; or air, which is most prop: hot and moist, he is large, amiable, aboundant in nature, merry singing, laughing ruddy and gracious, the more he Drinketh the merrier he is. ~ ~

The Phleymatick, hath nature, of water, cold and moist, he is heavy, slow, sleepy, ingenious ~

Ingenious, and commonly he spitteth when he is moved.

The Melancholy, hath nature of Earth, cold and drie, is heavy, covetous, a back-biter, Malicious and slow.

The Diffinition of astrologie

As for this art, it is not that the Ignorant people are perswaded of, that it is the doctrine of Devils, and unlawfull for any mans practice; but it is an art both usefull and lawfull, and one of the most noble and profitable arts, Studied and practised by any mortal; and certainly must by Consequence

Be the most diverting Science the world can afford; and it is divided into Two parts, viz) Astronomie, and astrologie, w.ch are both one art; astronomie and astrologie; astronomie consists in the knowledge of the Heavenly motions; + + + astrologie consists in y.e Effects and properties of the former motions. + + + + + + + + + +

How to know the ruling Planet that any one is born under. ~ ~

First take the name of the person desiring to know this, and then the name of his Father & Mother, and write down the numbers you find under each

Each letter of the three names, in the Ensuing Table, you must take all the Letters of the Christians names, and gather all those Sum's together, and then divide the Total when added together by nine, subtract afterward the product by nine as often as you can, and if there remain's an unite, or four both signific the Sun, if two or seven, both signific the moon; if three Jupiter, if five mercury, if six venus, if Eight Saturn, if nine Mars: this way if you go rightly to work, according to the method before you shall know what you desire.

A	B	C	D	E	F	G	H	I
1	2	3	4	5	6	7	8	9
K	L	M	N	O	P	Q	R	S
10	20	30	40	50	60	70	80	90
T	V	W	X	Y	Z	i	v	Xi.
100	200	300	400	500	600	700	800	900.

How to know the Ascendant that any one is Born under.

In the like manner as you did before, if you would know the Ascendant, any one is born under take the parties name, and of his Father and mother, and then divide the whole Collected

Collected together by Twelve: if there remain one it signifies Leo, or the Lyon, If Two, 2. if Aquarius, 3. if Capricorn, 4. if Sagittarius, 5. if Cancer, 6. if Venus Taurus, if palladium, 7. aries, if vulcan, 8. Libra, if Mars his nine Scorpio, if 10. Virgo, if 11. pisces, if Phebus, 12. the represent Geminies.

Of the Golden number what it is and why so called.

This is a number of one, proceeding from one to nineteen, and so begins again at One. it is so called because it was

Was sent in Golden letters, from Alexandria in Egypt into Rome, it is the Number of Nineteen, because in Nineteen Years the Moon doth make all her Sundry Motions and Changes:
To find out the aforesaid Number,
add, one to the Year of our L.d God, and divide the Same by Nineteen, and the Remainder is the Golden Number.

Example. I demand the Golden Number for the Year of Our Lord, 1724. First one added to 1724, makes the Sum of 1725. which being devided by Nineteen, the remainder is 15. which is the Golden number for 1724.

Of the Epact.

The Epact is a number of Eleven days, by which the common solar Year of 365 days exceeds the common, Lunar, of 354: and therefore Eleven days every Year being added to make them equal, are called the Epact.

To find the Epact for Ever. the Rule is, multiplie ye Golden Number by Eleven, and divide the product by 30, and the remainder is ye Epact; and if nothing remains its the same of ye Golden Numb.^r (as for Instance) what is the Epact for ye Year 1724. the Golden Number as was found before to be 15. and 15 Multiplied

By 11 makes 165 which said sum being divided by 30 the Remainder is nothing which denotes that the Epact for y.e Year 1724. is 15 the same of the Golden Number.

Of the Cycle of the Sun, and Dominical Letter,

The cycle of the Sun is a Revolution of 28 Years, wherein the Dominical, or Sunday Letters, A, B, C, D, E, F, G, make all their Several Changes: but y.e are to be Reckoned in a Retrograde Order, So that if this Y.e the Sunday Letter be F in the Next Year it will be E, Accord-

ing

according to the verse: Gaudet Francus Equo, Danus, Cane, Barbarus arcu, were there no Leap Year, those Letters would be run through in Seven Years; but because of Bisextile Every Fourth Year, when there are two Dominical Letters, One serving till Saint Mathias's Day, the other for the rest of ye Year, they take not all their turns under 28 Years.

And note, that ye Dominical Letter, and Golden number Change the first of January, & the Epact the first of march

To find the Dominical Letter. The Rule is

The Rule is, add ye Year its fourth and four, omitting Fractions Then divide the Total Sum by Seven, then Substract ye remainder from 7. and if one remains the Dominical Letter is A if 2, B, if 3, C, if 4, D, if 5, E. if 6, F if 0, G. this being so plain it needs no more Explanation.

To find the Cycle of the Sun.
The Rule is add to ye Yr Nine Divide the Sum by 28. and the Remainder is the Cycle of the Sun.
Example I demand ye Cycle of the Sun for ye Year 1724 first, I add 9, to 1724. and it makes 1733. which being devided by 28, the remainder is 25. which is ye Cycle of ye Sun

To find the age of the Moon.

The Rule is; add to the Epact for March 1, for April 2, for May 3, for June 4, for July 5, for August 6, for September 8, for October 8, for November 10, for December 10.
having added to the Epact the number for ye month, according to the Rule foregoing, add thereto ye day of the month, for which ye moons age is required: these three sum's added together, if less then 30, is the moons age; if more then 30, take 30 from it as often as may be, the remainder is the age of the moon.
The moons age substracted from 30, leaves y^e day of the

Change. again is added to, or Substracted from the day of the Change, leaves the day of Full moon.

Example

I demand the moons age, — January the 4th 172 $\frac{3}{4}$ — —

Epact — — — — — — — 15
Day of the month — . 4
Number for y. month 0

19. Sum

So I find January the 4th. 172 $\frac{3}{4}$ the moon is 19 days old. — which said 19 being substracted from 30 the remains 11, the Number of days to y. Change.

Of the dignity and dimension of y. Planets, and their distance from the Sun, and the Length of their Courses.

The first Planet above the Sun is Mercury, he performs his Course about the Sun in 88, Days; it is from the Sun to the Sphere of Mercury 12065773 Italian Miles, his Body is less then the Earth 2800 miles.

Next above Mercury is the Glitt-ering Star venus, who makes her Revolution about the Sun in 224 Days; it is from the Sun to venus 3636104 Italian Miles, She is lesser then y. Earth 175 Miles, She is y. biggest Star in The Firmament.

In the midst of all the Planets is the Earth, which is placed between Mars and venus, and accomplisheth her Revolution about the Sun in 365 days, 5 hours, 49 Minutes 4 Seconds, and 21 Thirds.
It is from the Sun to the Body of y.e Earth, 3166203 Miles, her diurnal motion 59 Minutes, 8. Seconds. is less then the Sun 333 times, and bigger than y.e Moon 45 times.

Next above the Earth is mars, who performs his course about y.e Sun In one Year, 321. Days, 22 hours, 29 Minutes, 44 Seconds; from y.e Sun to the Body of the Planet Mars, 7635292 Miles, & is lesser then the Earth 150 times.

Next above mars is Jupiter, who runs his Course in Eleven Egypt-ian Years, 315 days, 14 hours, 32 minutes, 54 seconds, from the Sun to Jupiter is 26179152 Italian miles, he is lesser than the Earth One time.

Saturn is the highest Planet in the System, and slowest in mot-ion, insomuch that he performs but one Revolution about the Sun in 29 Egyptian Years, and 126 days, one hour, 58 Minutes, and Two Seconds, it is from the Sun to Saturn 47833578 Italian Miles, he wheels in one day 85059 Minutes in one hour, 1589, in one minute 25 Miles, and is Twice as big as the Earth.

The moon is a secondary planet, and retains the Earth for her Center, about which shee performs her Course in 27, days 7 hours, 43 Minutes; it is from the Earth to ye moon 203236 Miles, shee is less then the Sun 15924 Times, and less than the Earth forty five times.

An Exact Judgment of ancient Astrologers, of the General accidents of the world happening to Men, Women and Children, by the falling of new years day.

(Sunday)

Knowing on what day of the Week new years day will fall.

Fall; if it fall on a Sunday, a pleasant winter ensueth, a natural and kindly Sumer, abundance of fruit, the harvest will be indifferant for weather, but producing some winds and hain:

a Temporate and seasonable Spring, it denotes many marriages, plenty of wine, and honey, the death of young men and Cattle, Robberies in most places, New Prelates, and Kings, Cruel Wars In some part, or other of World, towards the latter End of the Year, or at least much dissention, and discord among men.

(Munday.)

If new years day fall upon a Munday, the winter will be somewhat uncomfortable, the

The Summer Temperate, but no plenty of Fruit, Fancies and Fables dispersed abroad, many Agues: the death of Kings, nobles, and great Men, in most places Marriages, and a downfall of the Gentry.

Tuesday.

If the new year fall to begin on Tuesday, there follows a Stormy Winter, and a wett Summer, a Various Harvest, a moist Spring, Corn and fruit indifferent, yet Garden fruit shall not Florrish, great Sicknes amongst men, Women and Children, a mortallity of Cattel, many men shall die of the Bloody Flux, and everything save Corn shall be verry dear. x x x

Wednesday.

If on wednesday a warm Winter in the beginning, but towards the End Snow and Frost, a Cloudy Sum^r plenty of fruit, also of corn, Wine, Hay, honey, and all other things; damage and hard Labour to women with Child, death to many Children, plenty of Sheep, news of Kings and great wars, blood shed towards the midst.

Thursday.

If new years day begin on Thursday, both winter and Summer windy, a moderate Spring, save only it will be windy, and a rainy Harvest, many inundation towards the latter end of the Year, much fruit, and plenty of the

The Fruits of the Earth, and Honey; Flesh shall be dear, by Reason of the death of Cattle, in General, great troubles and Commotions about matters Religious, and women shall be very loose & Licentious.

Friday

If on a Friday a stormy winter, and no pleasant Spring, nor Sum.r and indifferent harvest, small store of fruit, wine honey, & Corn dear, many blear Eyes, many youth shall die, Earthquakes in many places, much Thunder & Lightning, also very tempestous, at land and Sea, a great mortallity amongst Cattell, great Commotions in many Countrys &c. and many heart divisions amongst men.

Satturday.

If the new year happens to fall on Satturday, their will ensue a mean winter, but a very hott Summer, a late Harvest, and a dry, windy Spring, garden herbs shall be cheap, much burning, plenty of honey, Flax, and hemp, the Death of ancient people in most places, many Feavours, and certain agues, great rumours of Warrs and suden Murthers in many places, for, or, upon little or no Occasion.

Rules worthy of approbation, and very Necessary, to be considered in putting Children to nurse, or a Trade, in placeing of Children &c.a

In setting Children to nurse, let the moon, when ye nurse first begins to give the child suck, be in the conjunction of venus, or in ye sextile or trine of her; also fortifie the moon and venus in the Radix.

To send youth to school, let the moon be in conjunction with Mercury, or in the sextile or trine, fortifie Mercury and the Moon in the Ninth house of ye Radix.

Now to know where the moon is, you may easily know by your Almanack for that year, especially In most tables now extant in any of the three Kingdoms.

If you send your Child to Prentice, Fortifie the moon and the Lord of the Tenth House, and the Sign of the Tenth House.

When you wean your Child, let the moon be remote from the Sun, nor in any of the Houses of Venus,
If the moon be in Libra, ye Child will never more care for the Breast.
Thus saith Haly.

Days throughout the Year held to be unlucky for undertaking any weighty Business.

January 1, 2, 4, 5, 10, 15, 17, 19.
February 3, 6, 9, 17.
March 3, 15, 16, 21.
April 2, 15, 21.
May 7, 15, 20.
June 4, 7.
July 15, 20.
August 19, 20.
September 6, 7.
Octobber 6.
November 5, 19.
December 6, 7, 11, 15, 16.

as for the dog days, that are held very fatal to those that sicken in them, they begin the Nineteenth Day of July, and ends the Twenty Eight day of august; therefore in those days be moderate in drink and diet, Physick not much

Much nor either walk, or labour to excess.
as for good days; the rest in general are Indifferently good, and particularly the nativity of our Saviour.
The apostles days, Easter and Whitsundays, and the annunciation of the virgin Mary.

To know the moons Changing, hour, and minute, by the prime motion.

When this we call the prime is found on the Letter A, in our Kalender Three days before the prime, then it will Change the Nineteenth hour, five minutes afterwards; but in Counting days, here, you must begin in the morning; or as we

Call it, after Twelve a Clock at Night; and when the prime is on the Letter B, then it will happen on the Third day at four in the Morning; when it is on the Letter C it will Change the fourth day at Eight a Clock in y. morning; If the prime is on the Letter D, then it will Change the Fourth day & Twenty hours from midnight; If on the Letter E, the fourth day & Eighteen hours after midnight; if on the Letter F then the Change happens the Third - - Day and Sixteen hours after midnight; if the Prime happens on the Letter G then the Change happens the Third day and fourteen hours after midnight. and so may the Change be known for Ever.

Brief Observations on New Years day, for Weather &c. throughout the Year.

If it comes on a Sunday, it brings a Cold moist winter, but a very fruitfull Summer, yet some disturbances are Threatned in divers places.

If New years day falls on Munday, then there follows an indifferent moderate Season, with rain, tho' little Frost or Snow, yet by reason of great Floods, some damage will be sustained, and merchants meet with losses at Sea.
the Sumer wet and sickly, yet pretty plentifull.

If new years day fall on Tuesday the Season will be variable mixed with Frost, Snow, Rain, Sun Shine, but the Summer proves very hot, which will much hurt the herbs, and the Bloody flux will be brief, and much Thunder & Lightning happen & flesh become dear.

If new years day happen to fall upon Wednesday, it promises a Temperate winter till march, and then Snow and Frosts shall happen, but without damage to Corn & Grass, which shall be, in its Season, in plenty; Trading will encrease among handicrafts, Especially, though great Roberies are Threaten-ed, & Some pestilential diseases.

If New years day happen to fall upon Thursday, then follows a long and Tedeous Winter much inclining to be Drye, but the Summer will make amends, in the begining but about the harvest expect much Rain, yet no want of plenty. + +

If new years day happens to fall upon Fryday, the winter will be tedious, and the Sumer unwholesome, harvest dry, the Ground Parched, divers Sicknesses abroad, much Thunder and lightnings, if not Earthquakes, people and Beasts will die &c."

If newyears day falls upon a Satturday, a frosty winter Ensues, Temperated with Sun Shine, yet does much damage to Fruit trees, however the Summer and harvest will make amends in plenty, though Sickly, Some quarrels ariseth, and much mischiefe in the World will happen on Several &c.

Observations on St. Pauls day.

It is held if it rain or Snow on Saint Paul's day, there will be Scarcity of grain; if the wind blows hard, wars and troubles are presaged; if a dark Cloudy day, Cattell and fowl will die, but if the Sun Shine, then matters will go well.

Of the Eclipses, & causes of them.

As touching ye Eclipses of Either of the Luminaries, you are to know, it is Only a privation of their light, that of the Sun is Occasion'd by ye Conjunction of ye Luminaries, or by ye Change of the moon, by ye Interposition of ye Body of ye moon: betwixt ye Sun & ye earth, averting or turning his beams from us, & so ye Sun becomes Obscure and dark for ye time: that of ye moon is Occasioned by a Diametrical Interposition of the Body of the Earth, betwixt ye Sun and ye moon, and therefore deprives her of her borrowed light Shee receives of the Sun, and this Ever upon ye Opposition of the Luminaries, or commonly at the Full moon.

Here ends Mr. Samuel Strange his Predictions In Astrologie, to which is added his Opinion of ye Eclipses of the Sun, and moon, and the Causes of them being Eclipsed.

The Honourable Brigadier Genl. Stearns Collections, Succinctly Treated of from ye best authors in Astronomie; of the Eclipses of the Luminaries; as Followeth.

Of the Eclipses and their Causes.

By an Eclipse in General is understood a defect of light happening in some of the Celestial Bodies, & is caused by the Interposition of an Opake Body, and our Sight;

light; now the Opinion of Astronomers are, that all the planets of themselves are dark bodies, having no light but what they receive from ye Sun; but the Sun and all they Sun, and fixed Stars are naturally Luminous, whence I will follow that any planet Interposing betwixt the Sun and our light, so also our primary Planet coming betwixt the Sun and its Secondary deprives that Secondary of its light, and consequently renders such Secondary planett un-Illuminated to its Primary.

Of Eclipses of the Sun.

An Eclipse of the Sun is caused by a diametrical Interposition

of the moon betwixt the Sun and the Earth, which commonly happens at the new moon, or when shee is in Conjunction with ye Sun; but Every new moon doth not cause an Eclipse because an Eclipse because of her Lattitude; yet the Sun seldom escapes one Year together without appeared Eclipse in some part of the world or other; because twice in one Yr the Sun and one node meet: also if the conjunction, or new moon doth not happen Just at the Sun's passing the Node, but within half a Degree, or 30 Miles from the node, he then must suffer an Eclipse, greater or lesser, according as the Node is nearer, or Remoter from him, at the time of

ye true Conjunction.

Conjunction; but if the meeting of the Sun, and either node happen at the very full moon, then shee shall totally Escape an Eclipse the next new moon.

Of Eclipses of the Moon.

An Eclipse of the moon is nothing but her being deprived of the Sun's light by the Interposition of the Earth, betwixt the Sun and her which can never happen but when the moon is at Full; nor doth it always happen then, because of her Lattitude, for if the Sun, of the Semidiameter of the moon, and ye Earth Shadow at the Time of the true full, be more then the moons Lattitude

she will be Eclipsed; but if ye Sun of the semidiameters be less then the Lattitude, she cannot suffer an Eclipse that Full; and though every full moon there be not an Eclipse, yet shee rarely passeth a passeth a year together without being Eclipsed little, or much, for the Sun passeth her nodes Every Ye

Eclipses are Either Total or Partial.
Total Eclipses are such as quite cover the Illuminated Body, and are either Central or not,
Central are when the Centers of the Sun, Earth and moon, be in a Sheight line, or when ye Centers of the Sun, Earth and Moon Concide:
Not Central, are when the Centers do not Concide.

Coincide. tho' notwithstanding they may be total:

Partial, are when the Sun, Moon, or other Luminous Bodys are but partly darkned.

Now the moon being less then the Earth, and the Earth much less then the Sun, Solar Eclipses are never, or very rarely total;

Yet if it happen the moon be Perigæon, and the Sun apogæon, and then an Eclipse of ye Sun may be total;

for then the moons apparent diameter Exceeds the Sun's considerably, and her Conick or perfect Shadow reaches the Superficies of the Earth, by which Such

Places

As are Situated within ye Compass of this perfect Shadow (the diamtr of which is about 300 Miles) do loose the whole light of ye Sun, which has caused such darkness that the Stars have appeared at Noon day, and so dreadfull that the Birds have fell to the Ground.

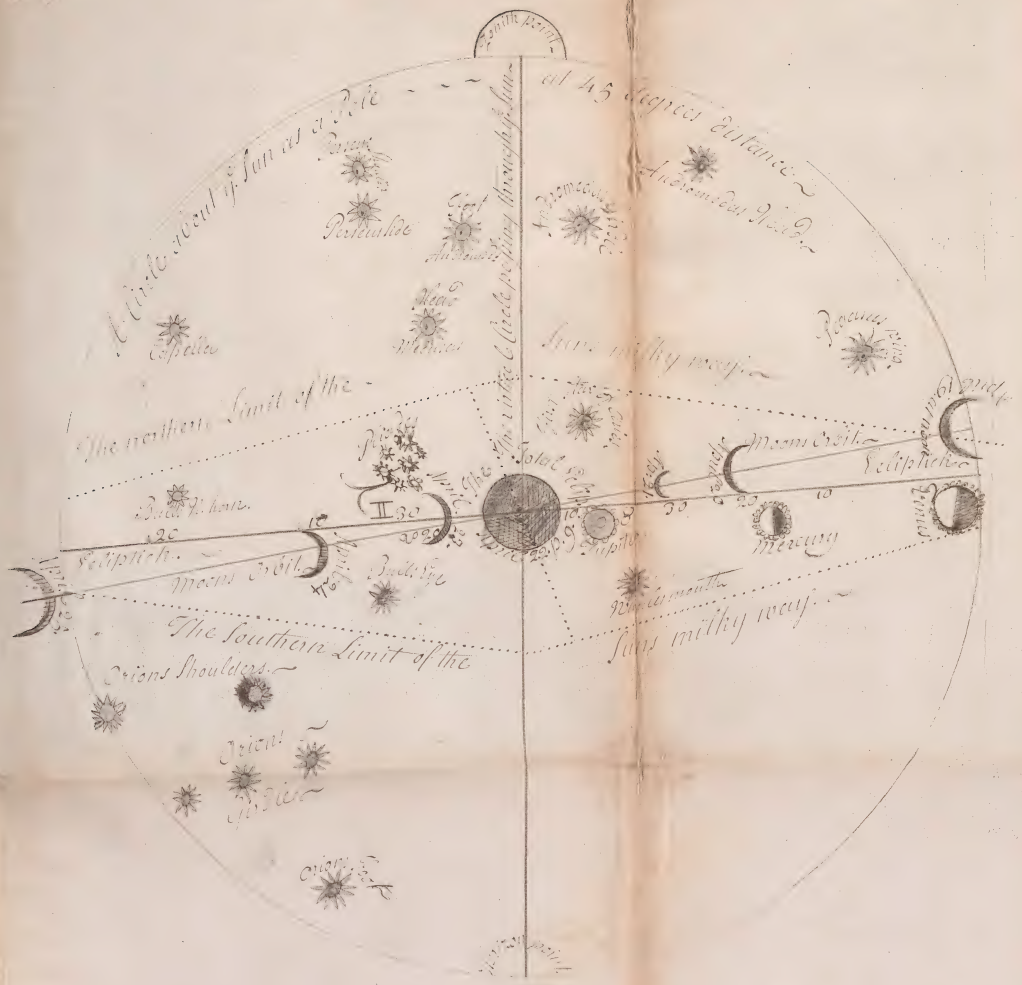
The Honourable Brigadr Genl Stearn's Second Collection of the Eclipses of the Sun, and Moon.

The Eclipses of the Sun, and Moon, their causes, and to know when Eclipsed.

Of the Interposition of the moons dark Body between the Earth & the light of its Beams, and to know

know when it will happen:
If the apparent Lattitude of ye
Moon, at the time of the visible
Conjunction be less then 30 minutes
40 seconds, there will be an Eclipse
visable of the Sun, in that Horizon
where the dimension is taken.

The Eclipse of the moon is caused
by the Earth interposing her Shadd-
-ow, which at that time reaches so
high as to hinder ye Sun's beams
depressed under ye Earth from
shining her dark Body, & to know
when shee will be Eclipsed:
If the moon shall bein Opposition
to the Sun in less then 10 Degrees
21, Minutes, 20 Seconds, the Ecliptick
Circle Carying ye moon about, shee
suffers an Eclipse in ye Horizon
where the dimension is taken.



Time of the Eclipse at London			Digits Eclipsed at London		
By my Col.	Dr. Halley	Mr. Flamstead	By my Col.	Dr. Halley	Mr. Flamstead
H. M.	H. M.	H. M.	Degrees Min.	Degrees Min.	Degrees Min.
Begin 8 7½	8 7	8 8	11 $\frac{22}{60}$	11 $\frac{4}{60}$	11 $\frac{13}{60}$
Middle 9 14	9 13	9 13½			
End 10 24½	10 24	10 24			

A Celestial Map of the Planets and Fixed Stars, and of the Sun's milky way which may be visible at the Time of the Total Darkness in this Eclipse, April the Twenty Second Past Nine in the morning; according to Dr. Isaac Newton, Doctr. Edmund Halley, and Mr. Flamstead.

A most Exact Calculation of this Eclipse according to Sr. Isaac Newtons last Improvement of the Theory of the Moon.

The Suns true Place and Anomaly.

	Suns mean motion	Motion of the Perihelion of the Earth
Anno Domini 1701	9 20 43 40	3 7 44 30
Years 14	11 29 36 46	14 21
April days 21	3 10 24 24	18
Hours 21	31 45	3 7 59 9
Minutes 36	1 29	Place of the Perihelion
Suns mean Motion	1 10 38 4	1 10 38 4
Equation add	1 36 43	Suns mean Motion
Suns true place	1 12 14 47	10 2 38 55
		Suns mean Anomaly

This map is a projection of near one Seventh part of the Sphere, described at 45 degrees distance from ye Sun & Moon as a pole, at the middle of this Eclipse.

It is made by a Tangent line of 45 Degrees, Equal to the Radius of the Circle, whose plain is supposed Perpendicular to a line from ye Center of the Earth to ye Center of the Sun and moon:

and that therefore if it be held up between the Eye of the Spectator (at the distance of half the diameter of the Circle) and the Center of the Sun & Moon, during the total Eclipse, with its vertical line, in the vertical Circle, and the Center be directed to ye Eclipse, Every one of the fixed Stars & planets

Planets will be in those lines that are extended from the Eye Thro' the Center of those fixed Stars & planets in the map; and so will easily be seen by every Observer.

And that the middle of this General Eclipse in common time will be but 42 Minutes 41 Seconds after Nine in the morning.

Note also the constant Breadth of the Shadow of Total darkness will be Ninety Eight Geographical Miles; and that its length on the Oblique Horizon of England will be near One hundred and 50 Miles.

A true and exact description of the Eclipse of the Sun which happen'd on the 22d. of April, with a true explanation thereof, according to the Rules of Dr. Edmund Halley, Astronomer Royal &c. Foretelling what will come to pass in great Britain &c.

Several Eclipses have been at sometime visible in divers nations, Regions & Countrys, from which were gather'd the many Transactions and Revolutions that follow'd; and as it is something Extraordinary that produceth these Effects and alterations of the Courses of the Sun and moon and as such amazeing Eclipses have been attended with Extraordinary Events; it is Expected that the total Eclipse

Eclipse which happen'd on the 22d of April 1715, will produce something Extraordinary Surprizing; I will endeavour according to the most Strictest Rules of art to a nice diffinition of it.

This last Eclipse happen'd in the Second Decanet of Taurus, the first Sign of the Earthly Triplicity falling in the Eleventh House, & Corresponding with divers of the Chiefest Planets, and those well posited in Relation to this Kingdome, which disposes all things to the compleating our happiness.

According to the curious Observation which was made concerning the Time of the duration of ye Eclipse, Dr Edmund Halley came ye nearest

It was total in a manner, Three Stars appearing visible in our Horizon; some distance from y.e South west Limb, of the Sun; the midle of it being at Thirteen Minutes past nine in y.e morning.

Before we proceed to the Events that attend Eclipses which happen'd in the same Signs, it will not be amiss to give a brief account of that which fell out in the time of King Stephens, In the Sixth Year of his Reign, on the Twenty first Day of march, 1140, being 575 Years since, in the morning that people were forced to light Candles, and divers Stars appear-ed near the Sun.

Before we proceed to the Events y.
once attend Eclipses which happen'd
in the same Sign's. Our historians who
liv'd in that time, gives us the
following account of the Effects that
attended this Extraordinary
Phenomenon.

Those who were for the Empress
Maud's Parliamentary Title, took
up arms against y pr̃fidious
usurper Stephen, defeated him in a
Battle near Lincoln, and took
him Prisoner; upon which the
Clergie to save their Bacon, subm-
-itted to the Empress, whome they
had formerly Curse'd; and tho' they
continued villians in their hearts,
and afterwards tack'd about again
in favour of the usurper, who
Recobtained the Throne for a time,

Yet he was forc'd at last, in Exclusion of his own Posterity, to agree to the Settlement of the Crown upon the Empress's Son Henry the Second, whom he Treaterously Endeavoured to have Murther'd:
But it pleased God to prevent it, by putting an End to the hatefull life and reign of the Usurper, who died suddenly of a violent fitt of the Hemerrhoids.

But to proceed, Eclipses of the Sun in Taurus, (the sign in which ye present Eclipse happens) allways portended great happiness to England, whilst France, Spain, Sweden, and Norway, &c.^a^ have felt dire Effects from their Influence.

To be particular, in the year 1688. we had two Eclipses of the Sun, one in Taurus, and the other in ~~Gemini~~, Scorpio, that year King William arrived in these Kingdoms.

In the year 1704. and 4. year 1705 we had again Two Eclipses of the Sun, in the same signs, in these years we took Barcelona and Gibraltar, forced the French lines, and gain'd the Victories of Shellenberg and Hochsted.

In 1706 we had two Eclipses of the Sun in the same signs, this year will be ever memorable for the Relief of Barcelona, and the Infamous retreat of the French army from that place, the march of the

The English to Madrid, and the famous Battles of Turin and Ramalies.

In the year 1707. we were blest with two more Eclipses in ye. same Signs, which Co-operating, or Co-operating with those of the former Year, we felt the happie Effects for three years together, during which Space, Successes Crowded in upon us Incessantly, and every Year seem'd a Jubilee, we won the Battles of Oudenard, Winnendale, Blazegnies, Saragosa, took Lisle, Tournay, Mons, Douay, air Bethune, Bouchaine, &c. thus much for Eclipses which happen'd in this Sign.

sign. this Eclipse was a very great One at Stockholm, the Capital City of Sweden, and at Rome.

Astrologers define, that Eclipses is occasioned by this means; first of the Sun, which happens thus, the new moons Interposing between the Sun and the Earth, which is allways in a Conjunction, doth therefore hide more or less of the Sun's Body from our sight; but yet the Sun is not Eclipsed in Every Conjunction, but when it falls in, or near the head or Tail of the Dragon.

Now it cannot be universal, as the Moons Eclipse is, but may appear in One Climate a great Eclipse, In another it may be lesser,

and in other some no Eclipse at all, and that at the selfe same instant, because the Eclipse of the Sun depends Chiefly upon the Parallax of the Moon, which is different in every Climate.

An Eclipse of the Moon is allways at Full, when the Shadow of the Earth Interposes between it and the Shadow of the Sun.

In divers parts of the East Indies, the Inhabitants beleive that when the Sun, or moon is Eclipsed, certain Demons or Spirits, who have very black Claws do stretch them forth upon those Two Luminaries, which they Endeavour to seize;

seize; and during the time of the Eclipse, you may see all y. Rivers covered with the heads of Indians; for they go into the water up to the neck, thinking that a most devout posture, for obtaining y. Sun and moon a deliverance, from that Demon.

In America the people are persuaded the Sun and Moon were angry with them, when they were Eclipsed, and are at great pains to make peace with them.

The Grecians believed a long time that the Magicians made the moon come down amongst them, and that she was by them Bewitch'd.

It will not be amiss to inform our Readers, of several Extraordinary Revolutions of the Sun &c. which happen'd in former ages, but more particularly since the Birth of our Saviour.

For in the first Year of his Nativity, was an Extraordinary Eclipse of the Moon, whose fatal Effects King Herod felt.

In the 34th Year of our Blessed Saviours life he was Crucified by the wicked hands of the Jews which produced prodigious Effects, attest'd as well by Heathens as Christians; at the time of his Death, was a great Darkness in the Day time, Continuing from Six a Clock till Nine, and yet there being no

No Eclipse of the Sun, it being full Moon, so it was miraculous, Contrary to the Order of nature;
and only by the power of God, who deprived the Sun of light for the space of that time.
and Dionysus the Areopagite being that day in Athens and seeing the Sun so darkned, and knowing by Astrologie, and the Course of the Heavens that this Eclipse must be contrary to nature, said with a loud voice, Either the World is at an End, or the God of nature Suffers.
and the wise men of athens being astonished at this Prodigie; caused an alter to be built to the unknown God, which St. Paul Reproved them for, declaring

That Jesus Christ the Redeemer of of the World who had suffered was the unknown God; whereby he converted many to the Christian faith; which demonstrates that ye darkness was over all the Hemisphere, since it was seen at Athens, and other places remote from Jerusalem.

The moon being then at ye full & having no light but what it receives from ye Sun, and being then in the Firmament under us, came to be violently darkned and Eclipsed, so that the darkness was universal over all the World, because the moon and Stars give no light, unless they receive it from ye Sun.

In 1477, the Sun was darkened without an Eclipse, the Hungarians defeated the Turks, and took 30000 Captives from em. The Spanish Inquisition is Instituted in Castile against the moors & Jews. King Charles ye Eight of France marched into Italy for ye conquest of Naples.

In 1683, there was a great Eclipse of the Sun, and Two Eclipses of the Moon; that Year ye English subdue Scotland, and beat ye Dutch and French at Sea;

The English Parliament surnamed the Rump, were turnd out by their own army.

The same Year Oliver Cromwel became protector of England.

In 1642, before the fight of Edge-Hill, three Sun's were seen in the North; in 1645, many more appearitions were seen, in the North, with divers Parelias or mock Sun's, and an Eclipse of the Sun, all England was at that time by the Ears. the next Year the Scots return'd home again; and that Year the English got into Ireland and subdued the Rebells there.

In the Year 1651, was a great Eclipse of the Sun, in Scorpio. November the fourth was lofty & unwonted winds; the same Year the long Parliament return'd, & turn'd out Richard Cromwell the Protector's Son, and soon after were turn'd out themselves. Several more Instances might be added, thus much at present.

The demonstration of the Following Figure.

To find how much of the Sun will be darkened at any time given during this Eclipse, by the help of the Following Figure.
Take the Semidiameter of ye moon between your Compasses and setting one foot of them on the line proposed, counted on the line of the moons way: with the other strike an arch within the Sun's disk; this where it passes amongst the Concentrick Circles, shews how many Twelfth parts, or digits of the Sun's diameter are then Eclipsed.
Thus the Sun's Center, or through the Center, draw a line to the line given counted amongst the

Divisions

In the uppermost part of y.e Sun's Disk: this shall represent the Perpendicul.r passing through the Sun's Center at that time, and shews how the Cusps of the Eclipse and parts will then appear.

Thus the beginning will be found at 8. hours and 8 Minutes.

Six digits darkned, or y.e Eclipse at the Center at. 8.h 30.m½ the Middle or greatest Eclipse at 9.h 13.m½

Six digits again, or the Eclipse at the Sun's Center, at 9.h 49½

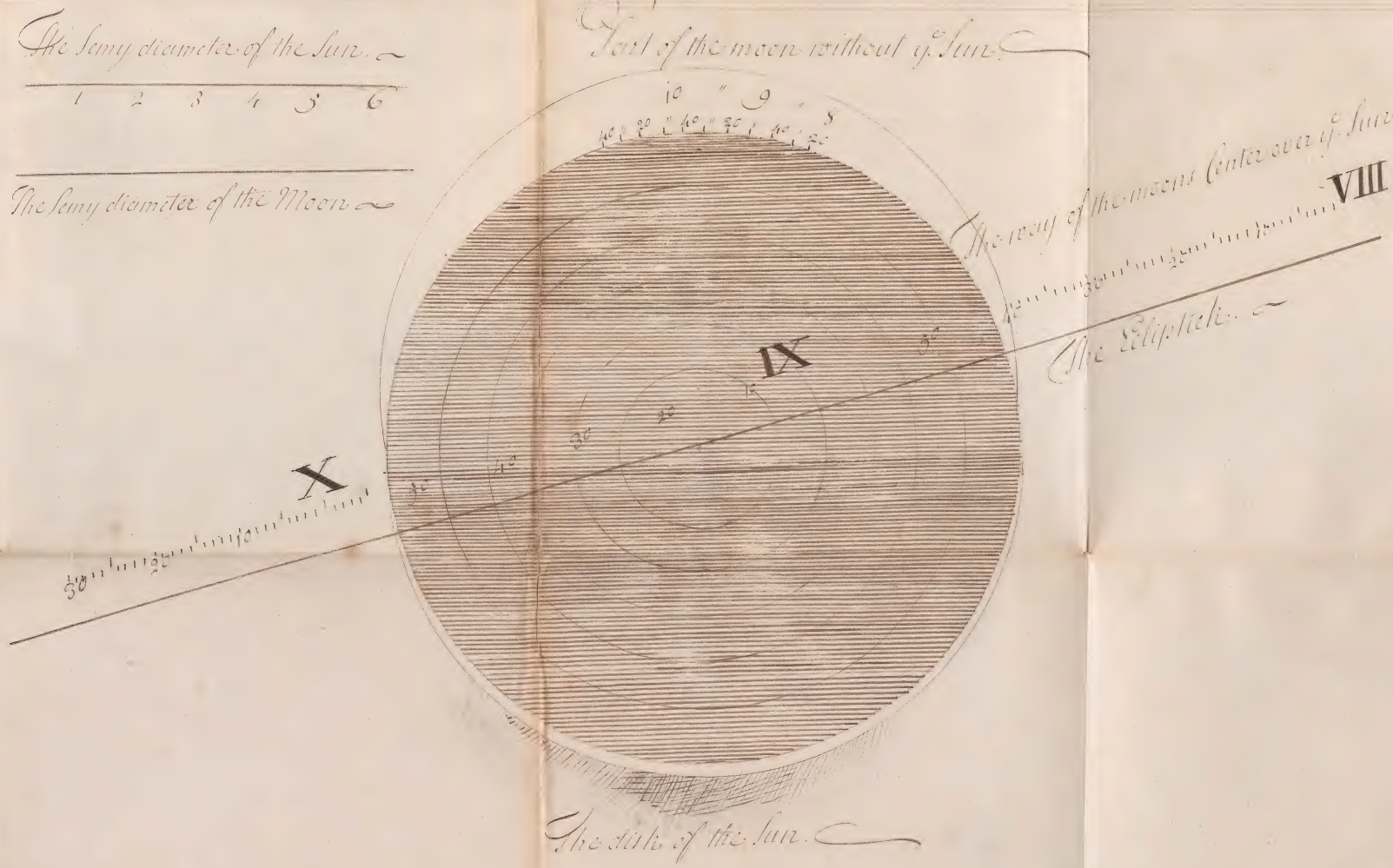
The End at, 10 hours 24 minutes

Digits Eclipsed at the midle Eleven hours ¾ or forty five minutes.

Observe the following demonstration.

(169.)

Mr Hamsteeds Figure of ye Eclipse of the sun, yt will happen April ye 22d 1715. In the morning, Shewing how it will appear at London and in the places adjacent, at any Time during its whole continuance. Deduced from his own Tables.



The demonstration of ye follow-
-ing Figure.

The Eclipse having not for many
ages been seen in the Southern
parts of great Britain, I thou-
-ght it not improper to lay down
some demonstration thereof.
that the suden darkness, wherein
the Stars will be visible about
the Sun, may give no surprize
to the people, who would if un-
-advertizd, be apt to look upon it
as Omnous, & to interpret it as
postending evil to our Sovereign
Lord King George, and his
government, whome God long
preserve.
Hereby they will see that there is
nothing in it more than natural,
and no more than the Necessary

Necessary result of ye motions of the Sun and moon, and how well those are understood will appear by this Eclipse.
According to what has been formerly observed, and compared with our best tables, we conclude the Center of the moon's Shade will be very near the Lizard point, when it is about five minutes past Nine at London; and that from thence in Eleven Minutes time, it will traverse the whole Kingdom, passing by Plymouth, Bristol Glocester Daventry, Peterborough, and Boston, near which it will leave the Island: on each Side of the Tract for about 75 Miles ye Sun will be totally darkened, but

for less, and less time, as you are nearer those limits, which are Represented in the Scheam, passing on the one side near Chester Leeds and Yorke, and on the other near Chichester Gravesend and Harwich.

At London we compute y.e midle to fall about 13 minutes past nine in the morning, when its dubious whether it will be a total Eclipse or no, London being so near the Southern Limit; the first beginng will be there at Seven Minutes past Eight, and the end at 24 Minutes past Ten, The Ovall Figure shews the Space y.e Shadow will take up at y.e time of the

the middle at London, and its Center will pass on to the Eastwards with a velocity of nearly 30 Geographical miles in a minute

Sir Isaac Newton's, Dr Whiston's, and Dr John Whalley's General Remarks of the great and terible Eclipse of the Sun, which happens May the Eleventh 1724.

An Eclipse of the Sun is caused by an Interposition of the moon betwixt that and the Earth; and by consequence happens by a natural Revolution of the Planets: Therefore as I would not Encourage a needless Superstitious Dread of Phenomena's On the one hand, So am I far from countenancing a presumptious Slight, or regard of the Wonderfull Works of God on the Other, because those prodigies, or Potentums, if the Sence will

Bear it,

(167) Have been allways found to be attended with fatal changes and alterations, such as sickness and Mortallity, Sedition & mortality and Rebellion, and War, &c.a
Neither will Trouble ye Reader to look any further back, than the great Eclipse which happen'd In ye Year 1715. and reflect on what Ensued thereon, viz. the unnatural Rebellion in Scotland, and England, and the Terrible plague in France, &c.a
God avert the like Judgments again on these nations.
as for this great Eclipse approaching, it will happen munday May the Eleventh, 1724, betwixt the hours of 5, and Seven in the

Evening, reaching over a consider-
-able part of the North west Regions
of the Earth.
The total darkness passing 125
Miles in Breadth, over Ireland,
and the South west parts of
England.
the north west parts of France,
and the South west parts of
Germany; Over Switzerland,
where the Sun will Sett Totally
Eclipsed; and will likewise
Include Dublin, and Paris, but
leave a Small Thread of light
at London.
Those who would be more partic-
-ular, may consult Dr Halley's
and Mr Whiston's Schemes, of the
last Total Eclipse; as also if Said

said Whiston's Copernicus, or
Astronomical Instrument for the
Calculation, and Exhibition of
all Eclipses published in 1715. —
and forasmuch as a great many
People received much damage in
there sight the last total Eclipse,
by too earnestly Observing ye Same,
with the bare Eye, they are hereby
advised, that an Ordinary
Telescope, with a Glass smoak'd
over the Flame of a Candle, —
Or with the image of the Sun,
cast upon white Paper, will —
with due care discover the
beginning and ending, of
the intire Eclipse, to half —
If not to a quarter of a minute.
Here Ends the Remarks for the
Eclipse in the Year 1724. —

The Rule for finding Easter in the Book of common Prayer Explain'd.

The Rule is in these Words.
Easter day is allways the first Sunday after the first full moon, which happens next after the one and twentieth day of march; and if the full moon happens upon a Sunday, Easter day is the Sunday after.
Where it must be Observed, that ye full moon mentioned in this Rule, is not to be found in ye common almanacks, but by ye Calender in the common prayer Book, viz by a Column of Figures Called the Golden number, not exceeding 19. which is in most and ought to be placed in all Editions.

Editions of the common Prayer
even with certain days in every
Month, e.g.
in march 1.° 3.d is set against the
first day.
In march the Eleventh is set
against the third day.
In march the Nineteenth is set
against the fifth day.
and so on; but it must be observed
that the Nineteen Golden numb-
-ers which have a Relation to
this Rule, begin with march the
Eight, and End with april the
fifth.
When the Golden number of the
Year, is known, as it may by the
Table of moveable Feasts, for
forty Years, then it must be observ

That the day of the month against which that number is placed is the New moon.

And when after this manner the New moon is found out, the full Moon meant in this Rule, is the fourteenth after Inclusive, that is accounting the day, of the New moon for the first, (because the Jewish Pasover was appointed to be kept on the fourteenth day of the first month Exodus the Twelft, and the Sixth) and the Sunday after is Easter day.

But if that fourteenth day (or Ecclesiastical Full Moon) be selfe a Sunday, then Easter day is not that day, but ye Sunday

after

As may be plainly be seen by this following Table.

Year of our Lord.	Golden Number for Each Year	The place of the Golden number in the Calendar denoteing y.e new Moons.	Full moon being 14 days after inclusive.	The Sundays after the new moon by y.e dom. Letter w.h is Earlier days
1710	1 "	March " 28	April. 5	April 9 " A
1711	2 "	March " 12	March 25	April 1 " G
1712	3 "	March " 31	April. 13	April 20 " F
1713	4 "	March " 20	April. 2	March 5 " D
1714	5 "	March " 9	March 22	Ap. 28 " C
1715	6 "	March " 28	April 10	Ap. 17 " B
1716	7 "	March " 17	March 30	Ap. 1 " A. G.
1717	8 "	April " 5	April. 18	Ap. 21 " F.
1718	9 "	March " 25	April. 7	Ap. 13 " E.

On the Year

A Year is the principal part of Time, by which not only the Ages of men and other things, but also the many actions in the World, (there beginings, progress, Continuance and Intervals) are measured: and is a periodical Revolution of a great Circle of Months, and days, in which the four Seasons of Spring, Summer Autumn, and Winter, are, after one Revolution of the Sun, Ordained to returne to their Courses.

But there are divers sorts of years, as saith the ancients, according to divers nations, which are differant from one Annother, Reduced to the Rule of the

The Celestial motions of the Sun and moon;

The Year is divided into Astronomical and Political parts, the Astronomical Year is likewise two fold; that is Solar, & Lunar. The Solar Year is the time in wch the Sun by his proper motion departing from one point of the Ecliptick, returns to the same again. and this is called either natural, or Sydereal.

The natural, or Tropical Year, is the Space of Time in wch the Sun departing out of the Tropical Equinoctial, or Solistitial points, and running thro the Ecliptick returneth to the same again.

This natural or Tropical Year is likewise Two Fold; mean or Equal and true, also called Inequal.

The mean or Tropical Year, Contain's 365 days, five hours 49 Minutes, and 15 Seconds.

The true or unequal Tropical Year, is sometimes more and sometimes less than the equal, by six or seven minutes, so it Increaseth, and decreaseth, according to the swift or slow progress of the Equinoctial or Solstitial points.

The Sydereal Year, is the Space of Time in which ye Sun returns to the same Star from whence he departed; and is 365 days 6 hours, 9 Minutes; but in the

The seconds there is a differance amongst the authors.

The Sydereal year is differant from the Lunar as Followeth.

The Lunar year, is likewise two fold; ye common which is 12, moon or 354 days, 8. hours, &c. & the Embolismal, which is 13. moons or Lunations containing 383 Days Twenty one hours, &c.

The Political or civil year, be such as are commonly used for the distinction of Times, wherein respect is had either to ye motion of the Sun, or moon, only, or to them both together, according to ye Custom of divers Nations.

The Julian, or old Roman Year
Consisting of 365 days, 6. hours.
This Julian account is used by the
English, Muscovites, Syrians,
Abassines; and the Ethiopians
tho' the name of their month differ.
It is held to begin (with ye vulgar
:) on the first of January: which
is therefore called new Years day:
but according to the State acc.
the Year begins not till the 25th
of march, at which time they
alter the date of the Year.

The Gregorian, or new Roman
Year, is so called, because being
mended by Pope Gregory the 13th
Consists of 365 days, 5. hours, 49
Minutes, and 12. Seconds; it begins
on our 22d of December, being

being Ten days before the Julian; and is received in all Countrys Owning the authority of ye. See of Rome, and in some Protestant Countries also, as in ye. Six, or 7. Provences, Utrich keeping the Julian account.

Of Months.

The months by which we measure the Year, are of Two Sorts, Viz. Astronomical and Political, and each hath Several Divisions: Astronomical or natural are according to the motion of the Sun, or Moon; and be either Solar or Lunar: The Solar are

spans of time in which the Sun runs thro' a Twelfth part of the Zodiack, of which there are Two sorts, mean, or equal; true, or unequal; an Equal Solar month, is the time in which ye Sun by his mean motion goeth a 12th part of the Zodiack and is allways 30. days, 10. hours, 29 minutes, 6 Seconds, &c.

but this true or apparent, is according to the true motion of the Sun through ye Zodiack; for when he is in or near his Apogeon, the months are Longer; but when he is in or near his Perigeon, the must by consequence be something shorter when the Sun is in or near his Apogeon.

Lunar months are refered to the moons motion, and are chiefly three fold, (viz) First periodical which is the space of time in wch the moon by her mean motion goeth through the Zodiack, and is about 27. days, 8 hours: secondly Synodical, which is the space of time from one Conjunction to another, being performed according to the moons mean motion in 29 days, Twelve hours, 44, min-utes, and about four seconds; but according to the moons true motion, it is sometimes greater, or lesser, by about Twelve hours.
Thirdly, the months of Illumin-ation, or apparition, is said

To be Twenty eight days, or four weeks, it being the longest time the moon is to be seen between Change and Change.
lastly the Political months are civil and usual, as every nation best pleaseth; which differ both in proportion and nature.

On days

Days are either natural, or artificial; a day natural is one Intire Revolution of the Sun about the Earth, which is performed in Twenty four hours, containing both day, and night: and this Day ye English begin at

at midnight; but ye Astrologers begin it at mid-day or noon. An artificial day is from Sun rising to Sun setting, and differs in length of equal hours, according to the Sun's place in ye Zodiack, and Lattitude of the Region.

But in unequal hours called planetary hours there are Twelve, So that one hour is the Twelfth part of a day, be it long or Short; and the hours that make an artificial day, are from Six, to Six; that is Seven, Eight Nine; Ten, Eleven. Twelve: One, Two, three Four, five, Six.

The Second Compendium of Months and days.

A month is properly the space of Time wherein the moon passeth through the Zodiack, but it is also taken for the time of the Sun's passing through the 12th part of it, and so the one is called a Lunar, and the other a Solar month.

A lunar month is either Periodical, that is, the space wherein ye moon moveing from one point of the Zodiack returns to the same again, and this is observ'd to be in 27 days and Eight hours; or Synodical, wherein the moon departing from Conjunction

Conjunction with the Sun, returns to another conjunction with it; but this cannot be under Two days, four hours 44, Minutes after its periodical Revolution; for in that time ye Sun is carried by its proper motion near one Sign further, so that this month contains Twenty nine days and Twelve hours, and is allso called the month of Consecution, because the moon follows to overtake the Sun.

A Solar month is the time of the Sun's passing through ye Zodiack's Twelfth part; which motion taken in a mean betwixt its excess and defect, takes up 30 days, 10 hours, and allmost an half; which days &c. multiplied by Twelve, make

up the Solar Year, and are Equal-ly distributed amongst the Twelve months; which accord. to the Cycle of the Sun & moon, and Course of the Almanak's, are in this Order.

1. January, denominated from Janus, first King of the Latines, who for his prudence and wise circumspection, is represented with Two Faces, the one look-ing backwards on things past, the other forwards on things to come; and so January has a Twofold reference, to the End of the Year past, and to the beginning of the Year to come. But some would have it so called from Janua, a Gate, for as by what we enter an house,

House, so by this month we enter upon the Year.

2d February, a Februo, to purge by sacrifice, because then ye Romans offered sacrifice to Pluto, and the Infernal Gods, for the Souls of their Ancestors.

These two months were added by Numa, to Romulus's Year, which having but 104 Days, consisted but of Ten months, beginning with,

3d March, so called from Mars, his supposed Father.

4th April, Qu. Aphrile, from ye Greek, ἀφρός, Froth, from whence venus is thought to proceed, or else ab aperiendo, because at this time the pores of the Earth open, and all things begin to grow.

6th May, à maioribus, the Elder.

6 June, à Iunioribus, ye Younger; for into these two sorts were the people of Rome at first divided. and from both were denominated these two months, as appears from that of Ovid.

Nine sua maiores tribuerunt nomina Maio.

Iunius à Iuvenum nomine dictus adest.

Englished thus.

Hence from ye Elders may derives a name.
The name of June then from ye Young came.

7 July changed from Quintilis to this name, in honour of Iulius Cæsar, who is said to be born on ye fourth Ides of this month.

8: August, so called, in honour of augus-tus Caesar, which before was Sextile, because the Sixth month from march, with which the Year did at first begin; and so the 9, Septem-ber, Tenth October, Eleventh Novr and 12th December, were thus num-ed, because the 7th 8th, 9th, and Tenth months distant from march.

As for the number of days belong-ing to each month there was some alteration made by augustus Caesar since the Julian Correction but since his time it hath contin-ued, in this order, in the Follow-ing verses.

Triginta aprilis, Junius, Septemq; Novemq;
Unc plus, alii, viginti Februus octo;

Ut si Bissextus fuerit superadditur unus,
Et tunc Bissexto martii conscribe Calendas.

The English of which is found in this old proverb.

Thirty days hath September,
April, June, and november
February hath Eight & twenty alone
And all the rest have 30 and one;
But when of Leap = Year cometh the time,
Then days hath February Twenty Nine.

These days of each month were by the Romans divided into three denominations, viz Calends Nones, and Ides, and which till

Till of late were in use in our English Calends.

1st The Calends are allways the first day of every month from which the days of the month proceeding are accounted backward, as the 31st of December is called Pridie Calendas Januarij, (the proposition ante being understood) The 30th Tertio Calendas, &c.a

In this numerical order, as far as the Calends reach. They have their names from the Greek καλέω to call because the Pontifex minor on the first day of every month did call an Assembly of the people, and Notifie to them what Feasts were Ordered to be kept in Every Month &c.a

On the Ides

Ides are placed in the midle of the Month betwixt the Calends and Nones, Dividing it into Three parts, and from hence have there Denomination, the old Latin word Iduo, signifying to Divide. These are of an Equal number, (viz) eight in each month, but for the nones in may, march, July, and October, are Six, and all the rest are the Calends. as is Expressed in the Following Verse.

Each months first Day we do ye Calends call
The names on march & Julys 6th do fall
Octobr & may; on ye 4th Day the rest,
And all ye months are of Eight Ides possest.

Nones begin at the Ides, and end with the Calends, and are reckoned with the Calends, pridie, nonarum Tertio nonarum, &c.ª
They are so called, as some Imagine, from the word Non, because during this time no Day dedicated to the Gods.
Nonarum tutela Deo Carct, &c.ª
Ovid.

The Second Compendium of the Golden number, Collected by the Honourable Brig.d Gen.l Hearne.

The Golden number, called also Decem-nonnalis Circulus, the Prime Cycle of the moon, and Metonicus (from metho its first Inventor) is a periodical Revolution of nineteen Years, in wh. ancient Astronomers thought that the Sun, and moon returnd to their same aspects that they were at Nineteen Years before, and was therefore received into the Church by the Fathers of the Nicene Council, for finding out the Changes of the Moon, for a due Observation of Easter.

But this has been since discover'd to be an Erroneous Rule, there being an anticipation of an hour and near an half, so that that Lunation which happen's in any month this present year, in nineteen years hence will fall an hour and half sooner, by which account the Error since the nicene Council has Increased to five four days.

This Golden number is placed in the first Column in our Liturgic Calend.r where you may find the mistake.
For Example.
Suppose the year of our Lord 1724; the Golden number is 15

Which I find in the month of January to stand against the Fourteenth day, upon which (according to this Rule) the moon should change; whereas this Year, the new moon falls on the fifteenth day of January.

It was called the Golden number, as some think from that Excellent use it was thought to be of, or more probably, because Writen in Rubrick or Golden Letters in the Calendar.

The second Compendium of the Epact Collected by the Honourable Brigad^r Genl Hearne.

The Epact is a number of Eleven Days, by which the common Solar Year of 365 Days exceeds the common Lunar Year of 354 Days; and therefore Eleven Days every Year being added to make them Equal, are Called the Epact.

But observe when the number Exceeds 30, you must Substract 30 from it and the Remainder is the Epact for that Year because from one Change

Of the moon to another there can be but 30 Days.
For Example.
The Epact this present Year 1724. is 16, to which 11 added the next year makes 26 which is the Epact for 1725. the like is to be observ'd for any other.

Only when you come to the great Intercalation, or last Epact 29. answering the Golden Number 19, there must be added 12 Days to make up a number 41. that 30 from thence Rejected, the Epact may be, as at the first Eleven.

To find the Epact for Ever. Multiply the Golden number for the Year proposed by 11 — Divideing the product by 30. and the remainder is the Number of the Epact: or Observe the Enslving Table; and when the Years of our Lord are therein Expired, place 1710. where is 1700, and you have both the Golden number and Epact for Ever.

A Table shewing the Epact & Golden number for 24 Years Including 1724. and may be found for Ever, by the before mentioned Rules.

A. D.	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733	1734	1735
Prime	15	16	17	18	19	1	2	3	4	5	6	7
Epact	16	26	7	18	29	11	22	3	14	25	6	17
A. D.	1736	1737	1738	1739	1740	1741	1742	1743	1744	1745	1746	1747
Prime	8	9	10	11	12	13	14	15	16	17	18	19
Epact	28	9	20	1	12	23	4	15	26	7	18	29

A Table shewing the Dominical Letter, and Cycle of the Sun for Ever, placing 1752. where is 1728. and Calculated here for 28 Years.

A: Dom.	1724	1725	1726	1727	1728	1729	1730	1731	1732	1733
☉ Cycle	25	26	27	28	1	2	3	4	5	6
Dom. Lett.	E.D.	C.	B.	A.	G.F.	E.	D.	C.	B.A.	G.
Alt: Dom.	1734	1735	1736	1737	1738	1739	1740	1741	1742	1743
☉ Cycle	7	8	9	10	11	12	13	14	15	16
Dom: Lett.	F.	E.	D.C.	B.	A.	G.	F.	E.D.	C.	B.
A. Dom:	1744	1745	1746	1747	1748	1749	1750	1751	1752	1753
☉ Cycle	17	18	19	20	21	22	23	24	25	26
Dom: Lett.	A.	G.F.	E.	D.	C.	B.A.	G.	F.	E.	D.C.

Note, the years 1724, and 1725 not Included in the 28; tho' here Inserted.

On a year from anothr author

A year is properly the time the Sun takes up in passing through the Twelve Signs of the Zodiack, and is Either astronomical or Civil, The former is also distinguished into Tropical & Sydereal and the year is also Either Solar, or Lunar.

The natural, or Tropical Solar year, is that time which the Sun takes to go from one point of the Ecliptick to the same again, and contains 365 Days five hours, and 12 Minutes.

The Sydereal year is the time the Sun takes departing from any Fixed Star, till it returns to the same again.

And it contains Thirteen months, or 52 Weeks, or 365 Days and allmost Ten minutes; which 08 hours in four years Time, amounting to Twenty four, or one whole Day, make that which is commonly called leap Year.

The civil year is that which is commonly in use amongst all nations being very various as both to its beginning & Length accordingly as the Follow the Course either of the Sun or moon or both.

The Lunar Year contains Twelve Lunations, and is less than the Solar by Eleven Days the Exact Duration of its being

Is 354 days, and Eight hours, and 48 minutes; so that its Head in about 33 years will run through all the month and Seasons of the year, and this kind of year is used by the Turks, &c.

On a year and a day.

In common law is a Space of Time that determines a right in many cases, in some implying an usurpation, and in Others a prescription: as in case of an Estray of any goods If the owner (after proclamation made) does not Challenge

Challenge it within that time
'Tis forfeited; so the year & Day is
given in case of an appeal, as
also for the Recovery of a person
Bruis'd, or wounded by another.

A year, Day, and waste is a part
of the Kings Prerogative, by
which he challenges ye profits
of his lands, and Tenements
of those that are attainted in the
petty Treason or Fellony, for
a year and a Day, & may at
Last waste the Tenements, root
up the woods, Gardens and
pastures, Plough up ye meado-
-ws, except the L^d of ye manour
Compounds or agrees with him
for ye Redemption of such waste.

On the Zodiack

The Zodiack in astronomy, is one of the greatest Imaginary Circles in the Heavens, wch passes Obliquely between the Two Poles of the world, and takes its name from the living Creatures Representing the Twelve Constellations, or Divisions call'd Celestial Signs which are contained in it, 'tis cut into equal parts by the Equator, one part of which comprehends the Six Northern Signs towards the artick Pole, and the other part comprehends the Six Southern Signs towards the Antartick or South Pole, The Sun goes about this Circle

Circle once ~~every~~ year, and ye Moon once a month, and in the midle of this Circle is placed the Ecliptick Line, from which the Sun never Departs; but the Moon and the Planets wander up and down for the space of Eight Degrees, and sometimes more, on both sides; upon which account the Zodiack is supposed to reach Twenty Degrees in Breadth.

Bisextile or Leap Years.

Is so called because amongst the ancient Romans the 6th.

If the Callends of march or the 24 day of February was twice counted which happens every Fourth year; but now the odd Day is usually added to the last of February; having but in it 28 the Days, Except Leap Year, and then it hath in it 29 days; which addition was made that the Year may equal the course of the Sun.

The Rule for finding when Leap year will fall.

Divide the year proposed by 4 and if nothing remains that same year, is Leap Year

And if one remains, then it is The first after, if 2 Remains its the second after, if Three Remains its the 3d after.

Example

4/1724/431
16
12
12
4
4
0

Nothing Remains

So you see after my Division is Ended there Remains nothing Remember the Foregoing Rule and it gives yo desire.

On the word Degree.

a step, any state, or condition & which is as it were Ascending or Descending.

In astronomy 'tis the 360 part of the Circumferance of any Circle; which is Sub-divided into 60 parts called minutes and each of them again into 60 parts more called seconds; and so into thirds &c. & & & and the space of one degree in the Heavens is commonly counted to answer to 60 Miles on the Superficies of the Earth.

In Fortification a Degree is a smal part of an Arch of a

a Circle (every circle contain-ing 360) which serves to measure the content of the angle, so an angle is said to be of 20, of 50, of 70 degrees.

In Physick and Chymistry a degree is taken for the Vehemence of the Hott, or cold Quality of any Plant, Drug, or mineral; or other mixt Body.

A Parodick degree.

(In Algebra) the Index, or Exponent of any power: so in numbers it is the Exponent or Parodick degree of ye Root or side, 2, of ye Square, 3 of ye Cube.

A degree of Fire

(amongst Chymists) are reconed to be about Four in number, the first is made only by two or three gentle coals, and is the most gentle heat of all: the second is with four, or five Coals, or only Just to warm the vessell sencibly, but so that any Person may endure his hand upon it for some time.

The third degree is when there is heat Enough to make a Pott Boyl, that is full of Five, or Six Quarts of water.

The fourth degree is as great a Heat as can possibly be made in the Furnace, but all these admit of some variation according to the particular Circumstances of ye Operations of Furnaces, vessells, and Quantity of matter.

Twelfth day, or Twelfth Tide.

The Festival of the Epiphany appointed in Remembrance of our Blessed Saviours manifestation to the Gentiles, and comonly so called because this 12th Day Exclusively from Christmas Day.

On the Epiphany, or 12th day.

Epiphany, appearance properly from the above manifestation which is a word now applyd to the Festival Cellebrated on the Sixth of January, and common-ly called the Twelfth Day, on which Christ was made manif-est in the Flesh to the Gentiles, by the appearing of a Miracu-lous Stare in the East which Conducted the wise men to the Place of his Nativity.

On the word Epiphany; a Fast kept on the 6th of January being the day of our Saviour being made manifest to the Gentiles.

Epiphany, the word signifies appearition, or manifestation, and is kept chiefly in memory of the appearance of a star manifesting Christ to the Wise men.

Of old the day of the nativity, or the manifestation of Christ in the Flesh, was by the Greek Church kept at this Time, and under the name of Epiphany, till the Received more Light in the Case from the

Churches of the west, who allways kept them as Two Distinct Feasts; and this latter for a threefold cause, for three manifestations of our Saviour upon this Day, though not in the same Year, and therefore used to be called Epiphanies in the Plural, and by some distinguished into Epiphanies, Theophanies, and Bethphanies.

Epiphanies, from the appearance of a Star manifesting Christ to the Gentiles, as before.

Theophanies, from the manifestation of the whole Trinity at our Saviours Baptism, when the The three persons did sensibly manifest themselves,

themselves, the Father in the Voice from heaven, the Son in the Flesh in the River Jordan, and the holy Ghost in ye Same Shape of a Dove.

Bethphanice, from the manifestation of his divine Glory by his first miracle in the house of Marriage in Cana, when he turn'd water into Wine.

It is called in some places the Feast of Kings, because it was believed that the Three wise men that came from the East to adore our Saviour were three Kings of Arabia, which indeed is East from Jerusalem, and it is said in the 72 Psalm,

The Kings of arabia shall bring gifts, according to which is the following Distich.

Tres Reges regi regum tres dona ferebant,
Myrrham homini uncto aurum, Thura deo deo.

Thus Englished.

Three Kings with gifts the King of Kings have sought,
Myrr, Gold and Frankincense they to him brought.

These wise men or Magi, were afterwards called the three Kings of Collen,

because their bodies after several Translations are reported to rest there, which the Monks of that place much boast of and pretend to shew to strangers their Tombs, to which are Fastned Tables wherein the History of them is Ineribed.

From the story of those Kings came the Custom of chusing King, and Queen upon this Day.

which is allways kept as a Festival upon the 6th of January, and commonly called by the Vulgar the 12 Day, because it being 4. 12 Day after Christmas Day, that Day not included in 4. 12.

On the Epiphany Solemnized on the 6th of January, and commonly called the 12th Day; by way of Question and answer Explained. Collected by the Hon.ble Brig.r Gen.l Sterne. &c

Question. What Festival does the Church Celebrate this Day?

Answer. The Epiphany, or the manifestation, (as the word signifies in the Greek) of our Saviour Jesus Christ to the Gentiles.

Question. To what Gentiles was our Saviour as this Day manifested?

Answer. To the wise men of the East, called Magi in the Greek; who were famous for all sorts of Learning, Especaly Celebrated for their Skill and knowledge in Astronomy; and in the East their Priests and men of the best Quality dedicated themselves to these studies: tho' some authors are of opinion, that the Greek word we translate to be wise men, is in the Scripture allways taken in the worst sense, for men practising Magical and unlawfull arts; and if it be so understood, it magnifieth the power and grace of Christ the more, that among the Gentiles men of such a Profession should be y. first adorers of the Blessed Jesus.

Question; what other signifi-
-cation has the word Epiphany,

Answer, It signifies Christs
appearance in the world, the
Nativity of our Saviour; which
amongst the ancients is com-
-monly stiled, the appearing
simply, or the appearing of
God.
and the Feast of the nativity
being Celebrated Twelve days,
of which the first and the last,
according to the Custom of the
Jews in their Feasts, were
high, or chiefe days of Solem-
nity, Each of these might
fitly be called Epiphany,
In that sense, and not only

Only referring to the Star; though not excluding but containing it also, as a Special Circumstance belonging to the nativity. Beside, the word has been forth made our Saviours Baptism, and his Miraculous power at the marriage in Cana, by turning water into wine.

Question, how did God manifest the Birth of our Saviour to the wise men.

Answer, by a Luminous appearing of a Star in the Lower Regions of the air, Observed by those wise men, to differ

from the ordinary Stars of heaven which as a new prodigious light, seem'd to them to presage something of great moment and consideration.
For new Stars amongst the Gentiles were sometimes look'd upon as Omens that Infants Born at that time of their appearance should arrive to great power.
The appearance of the Star, & the Journey of the Caldean wise men is mentioned by Chalcidius the Platonist.
It seems not improbable what some authors have suggested, that this seeming Star which appeared to the wise Men,

Men in the East, might be that glorious light which shone upon the Bethlem shepherds when the angel came to impart to them the glad Tydings of our Saviours Birth; and at a distance might appear like a Star, or at least after it had thus shone upon the shepherds might be lifted up on high, and then formed into the likeness of a Star.—

Question, how could the wise men at the Birth of our Saviour from the appearance of this Star which they saw.—

Answer. Some think they
might receive light in this matter
from the prophesie of Balaam,
or from some other Prophesies
in Daniel; but as one seems too
obscure in determining any
particular time, so the others
were not probablic known to
the Chaldeans.
Tis more likely they might be
governed by that General
Expectation the world was
then in of an universal
Monarch, and by the particu-
lar Expectation the Jews had
of the Messiah's comeing in
that age, which might Easily
be Promulged to the Neighbour
ing nations. tho' besides this,
some way of divine Revelation,

Revelation may be supposed by their calling King of the Jews. — Matthew the 2d & the 2.
For when God gave an Extraordinary Sign, we may well Imagine he would take care to have it understood.

Question, how did they learn that our Saviour should be Born in Bethlehem.

Answer, upon their arrival at Jerusalem, they published the cause and design of their Journey; which gave great uneasiness to Herod, who was Jealous of any Competitor. —

Upon which Herod enquiring of those who had greatest in the ancient prophesies, what place was assigned for the Birth of the Expected Messias.
When he understood y. Bethlehem was mark'd out for that hon. he communicated to the wise Men the Determination of the Chiefe Priests and Scribes, with design to destroy this young Prince, if the discovered him; strictly charging them to bring him word, pretending that he would go and worship him; which trouble and jealousie of Herod confirms y. Expectation the Jews had of a King to be born about that time.

Question, How did the wise men find the young Child Jesus.

Answer. By the help of the same Star which appeared to them in their own Country; which was now visible to them again, and conducted them in their search of our Saviour, by going before them, & standing still where the young Child was; which was matter of great Joy and Satisfaction to them.

Question, how did the wise men behave themselves upon their finding of our Saviour.

Answer: They fell down and wor-
-shiped him, and opened their
Treasures, and presented unto him
Gifts, Gold, Frankincense, and
Myrh; the most valuable produ-
-ct of their own Country; thereby
allways acknowledging his
Majestie, according to the Cust-
-om all over the East, where they
were wont to approach Kings
with presents.
And by the Quallity of their
gifts they seem'd to describe the
Object of their adoration; for
the offered Myrh as to a mor-
tal was to be delivered to death
and the Grave for our Salvation;
Gold as to a King, whose King-
-dom should have no end; Incense

Incense to a God, that was made known to them that sought him not. x x x x x x x x x x

Question, why did God manifest his son to the Gentiles. x x

Answer, that his grace might appear to all men.
For as the Jews had notice of our Saviours Birth, by ye appearance of angells to the shepherds; so the Gentiles received it now by the appearance of a Star; thereby shewing that ye time was come wherein the wall of Partition should be broken.

Down, and that all nations sho-
-uld be one sheepfold, under one
shepherd, the Lord Jesus. &c.

Question, wherein appears the
Zeal and courage of these wise men.

Answer, That upon ye appear-
-ance of an Extraordinary Star,
they undertook to such a long
and tedious a Journey, neither
Regarding the discourses of the
World, which might charge
them with Folly & rashness,
nor considering the dangers
of going to proclaim a new
born King at the Court of a
Jealous Prince.

Question, wherein appears the Zeal and Courage of these wise m^n.

Question, and what may we Learn from the Observation of this Festival. x x x x x x x x x

Answer, that true wisdom does not so much consist in a great understanding, Furnished wth a vast Stock of universal Learning, as in the use of such advantages to the noblest purposes of serving God and doing good. that no man is too great to be Religious, because piety and virtue are the Only Qualities -

shed enoble the mind, without which, Birth and title will never give a man a solid and lasting Character.

Readily to obey all Divine Inspirations; for tho' God prevents us with his grace, yet he Expects we should make a right use of it.

Not to be discouraged with any difficulty that lies in the way of our duty; and notwithstanding the Censures of the world which will be apt to Condemn us, when we depart from the common Road of its Loose Maxims.

Yet cheerfully to obey when Obligation calls.

To quit our Country, and all

all the advantages of life, nor
Obedience to Gods commands
makes it necessary.
To take care to testifie the sinc-
-rity of our faith, by not being
Barren or unfruitfull in the
knowledge of our Lord Jesus Christ
To make the outward acts of
our adoration, and the doing
Homage to the Deity, Real Expre-
-ssions and the sense of our minds
and inward affections.
To offer to him the treasure of our
hearts, which is the Chiefe
Sacrifice he Requires of us
while we live here on this
Transitory Earth, and for doing
ye same, he gives us a Crown of
life.

Question, what virtues do the Offerings of the wise men represent unto us as an acceptable sacrifice to our Blessed Saviour.

Answer, Gold, which is ye common standard of those good things we enjoy, and wherewith we may relieve the wants of the poor, is a fitt Emblem for Charity & works of mercy, an Odour of a sweet smell, & sacrifice acceptable, well pleasing to God. & and David's desireing his prayr might be set before God as Incense, and the Prayers of ye Saints ascending after the same manner in the Revelation's, shews

shews us how fitly our adresses to Heaven are represented by Frankincense.

and the chiefe use of Myrrh being to preserve dead Bodys from putrefaction, is a lively Image of mortification, that we should present our Bodies a living Sacrifice, Holy, acceptable to God.

So that the Offerings of a true Christian should be out of a pure Heart, Charity, Prayer and Mortification, and a good Conscience void of offence to all men.

Question, how may we make our Riches an acceptable Sacrifice to our Blessed Saviour.

Answer by making use of them to those Ends and purposes for which the were bestow'd, in supplying the Exigences of our Families, and in making such excellent provision for our Children, as becomes the Station we are placed in; by satisfying all our Just debts, and not oppressing our poor Neighbours by delaying the Payment of them: & particularly by takeing care that the Necessitous, and those that want Relieve, allways have their due Proportion, which Justice as well as Charity gives them a right to.

Question, When may our prayers be said to ascend before God as Incense.

When they are offered with such constancy and Fervour, as shews we are Earnestly Solicitous of those things we ask.
and yet with such modesty and humility as loudly proclaims our own unworthiness, and magnifies that wonderfull Condescension whereby we are admitted to approach God's Patience and presence.
When our minds are abstracted from the world, and the Concerns of this life do as little as

May be mingle our Requests to God.

Above all, when our Petitions are offered with faith, nothing Wavering.

and then we may be said to believe we shall receive the good things we ask, when we perform those Conditions upon which God has promised to bestow them. x x x x x x x x x x x

Question, when is our mortification an acceptable Sacrifice.

When we not only abstain from the outward acts of Sin, which feed our disease and strengthen our ill habits; but when we

We deny our bad Inclinations the consent of our wills; and deprive them of all those Occasions and Liberties, which tho' lawfull in themselves are yet dangerous to us; because they set us upon the brink of a precipice: and when this contradiction are allowed pleasure, is designed in Order to get the better of all sinfull desires, so that we may not be governed nor led by them.

Question, how ought we to Commemorate the manifestation of our Saviour to the Gentiles.

Answer, with a great thankfulness of mind; because upon this Enlarging the way of salvation we became acquainted with the knowledge of Jesus Christ.

and with a compassionate sense of the miseries of those that still sit in darkness, and want the light of ye glorious Gospel.

On Candlemas Day.

Candlemas day is the Festival of the purification of ye Blessed Virgin Mary, kept Feb: 2d Called because Candles were Formerly Consecrated on that day, and set apart for sacred use for ye whole Year; and a solemn procession was made with some of those Hallow'd Candles, in memory of the divine light with which Christ Enlightned the Church at his presentation in ye Temple, when called by Saint Simeon a light to lighten the Gentiles.

The Invention of Guns.

A German Friar of the Order of St. Francis, called Bertholdus Swart, being very Studious of Chimistry, as he was one Evening (for the finding out some Experim.) very busy in Tempering Brimstone, Sulphureous powder of dry'd Earth & certain other Ingredients in a Morter, which he covered with a Stone, when it grew dark, he took his tinder Box to light him a Candle, a Spark thereof by chance flying into the morter caught hold of the Brimstone, the Cunning Chymist guessing what it was

Was w.h wrought this Effect never
till he found out the Certainty, &
then taking an Iron Pipe, he
cram'd it full of the S.d Ingredient
together with some Stones; and
so putting Fire to it, he saw that
with great fury, and noise, it
discharged itself; soon after
which he communicated this
his Invention to the Venetians,
who having been often van-
-quished by the Genoueses,
did by the help of these Bomb-
-ards or Guns, give them a
total overthrow in the Year
of our Lord, one Thousand Three
Hundred and Eighty

Two Tables whereby to find all the moveable Feasts in the Church of England for Ever.

Table 1st

	0	1	2	3	4	5	6
Prime	A.	B.	C.	D.	E.	F.	G.
1	8	8	8	8	7	7	7
2	6	6	6	6	6	6	6
3	9	9	9	9	9	8	8
4	8	7	7	7	7	7	7
5	6	6	6	6	5	5	5
6	9	9	8	8	8	8	8
7	7	7	7	7	7	6	6
8	10	10	10	9	9	9	9
9	8	8	8	8	8	8	7
10	7	7	6	6	6	6	6

The Remainder of the Table on the Other Side

The Remainder of the First Table.

Prime	0 A	1 B	2 C	3 D	4 E	5 F	6 G
11	9	9	9	9	9	9	9
12	8	8	8	7	7	7	7
13	6	6	6	6	6	6	5
14	6	6	6	9	8	8	6
15	7	7	7	7	7	7	7
16	6	6	6	5	5	5	5
17	9	8	8	8	8	8	8
18	7	7	7	7	7	6	6
19	10	10	9	9	9	9	9.

The Second Table

Intercalum Minus Week	Days	Quad.	Easter day	Rogat: zon Sunday	Ascen sion day	Whitsun Sunday	Advent Sunday	Intercalum Masu
5	5	8 Feb	22 Mar	26 Ap	30 Ap	10	29 No	27
5	4	9	23	27	1 May	11	30	27
5	5	10	24	28	2	12	1 De	27
5	6	11	25	29	3	13	2	27
5	0	12	26	30	4	14	3	27
6	1	13	27	1 May	5	15	27 No	26
6	2	14	28	2	6	16	28	26
6	3	15	29	3	7	17	29	26
6	4	16	30	4	8	18	30	26
6	5	17	31	5	9	19	1 De	26
6	6	18	1 Ap	6	10	20	2	26
7	0	19	2	7	11	21	3	26
7	1	20	3	8	12	22	27 No	25
7	2	21	4	9	13	23	28	25
7	3	22	5	10	14	24	29	25

The Second Table Continued.

Interdalum Minus Weeks	Days	Quad.	Easter Day	Rogation Sunday	Ascension	White Sunday	Advent Sunday	Interdalum Maius
7	4	23	6	11	15	25	30	25
7	5	24	7	12	16	26	1 Dec.	25
8	6	25	8	13	17	27	2	25
8	0	26	9	14	18	28	3	25
8	1	27	10	15	19	29	27 Nov.	24
8	2	28	11	16	20	30	28	24
8	3	1 Mar.	12	17	21	31	29	24
8	4	2	13	18	22	1 June	30	24
8	5	3	14	19	23	2	1 Dec.	24
8	6	4	15	20	24	3	2	24
9	0	5	16	21	25	4	3	24
9	1	6	17	22	26	5	27 Nov.	23
9	2	7	18	23	27	6	28	23
9	3	8	19	24	28	7	29	23
9	4	9	20	25	29	8	30	23
9	5	10	21	26	30	9	1 Dec.	23
9	6	11	22	27	31	10	2	23
10	0	12	23	28	1 June	11	3	23
10	1	13	24	29	2	12	27 Nov.	22
10	2	14	25	30	3	13	28	22

The Foregoing Table Explained.

The first shews the distance betwixt Christmas day & Quinquagesima, called intervallum minus; where first look for ye Golden Number descending on the first Collumn on the left hand, till you come under the Dominical Letter, (which in Bisextile must be the latter) for the Year Proposed, where you will find in the common angle the number of weeks, and over the Sunday letter the number of days, the Space betwixt Christmas and Shrove Sunday.

For Example; In this present Ye 1724. the Golden number is 15. & the Dominical Letter is D. find therefore 15. in the first row under prime, then proceed on ye right hand till you come under D. where you will find 7 Weeks and 3 days, and thews that from Christmas to Quinquagesime Sunday is 7 weeks and 3 days which Intervalum minus being found look for ye same in the second Table, in ye first Collumn on the left hand, over against which are placed the moveable Feasts in Order as written in the Front of the Table, and there you will find over against 7 Weeks & 3 days

Quadragesima to fall on Feb. 2
the 22d. Easter day April the 5th
Rogation Sunday May the 10th
Ascension Day May the 14th
Whitsunday May the 24th
Advent Sunday November 29.
and lastly Intervallum Majus
or the distance betwixt Trinity
Sunday and advent is 25 Weeks
which is the true
Stating of the moveable Feasts
for Ever.

Collected by the Hon.ble Brigad.
Gen.l Stearne, in the Year
1724.

On Hallary kept as a Feast the Thirteenth of January.

Hallary this was a learned Father, of the Church, and Bp, of Poictou in France, the first of the Latins y. wrote against the Arian Heresy, by which he acquired a great Reputation, of whom Paschasius in his Teones hath these verses.

Et nos exhilaris, Hilari sanctissime Presul,
Et monitis victa est arrica secta tuis.

Thus Englished.

Us thou Refoyed patron of Hallary,
Thy doctrine Quell'd th' Arrian heresy.

A remarkable Old Prophesy on St Pauls day.

Clare dies Pauli bona tempora denotat anni,
Si fuerint venti designant prelia genti,
Si fuerint nebulae perecum animaque quaeq;
Si nix si pluvia designant Tempora Cara.

Thus Englished.

Good year Expect if St. pauls day prove Clear
If windy it portends a Bloody year,
If Cloudy it denotes Mortallity,
If snow, or Rainy foretells Scarcity.

A remarkable Proverb on the Purification day.

Si Sol Splendescat maria
purificante,
Major erit glacies post quam
fuit ante.

Thus Enlished.

If Purification day sunshining last,
More wint.r is to come then there is past.

Remarkable Proverb on some Feasts, as followeth.

Post Cineres, Pentec, Crucem ~
Potq; Luciam,
Mercurij, veneris, Sabbathi ~
Jejunia fiunt.

Thus Englished.

Wed: Satur: & Fry days each a fast,
Which comes next n.r ashweames.d is past
Or Lucy, holy Rods or Pentecost.

A Remark when Leap year happens to fall.

Bisextum Sextae martij tenuere Calendae,
Posteriore die celebrato Festa Matthiae.

Thus Englished.

On a leap year commemorate ye may
The 25th of march matthias day.

On the Birth of King William the 3d 1650.

November the 4th 1650. was Born his late matestie King William the Third, of glorious memory, nine days after his Fathers death. He was Son to Henry Nalsau Prince of Orange, and Princess Mary eldest daughter to King Charles the Martyr.
Orange is a small principallity taken out of the Earldom of Provence, and came to y. Family of Nalsau A.D. 1530. by Henry Nalsau's marying with Claud sister and heiress of Phillibert de Chalous y. 4th absollute prince of that Country; his Ancestor Adolph was Emp. Ano Dom. 1292.

On the Papists conspiracy, the 5th of November Anno Dom. 1605.

Furiæq; Erebusq; negarent
Hoc tantum dictare nefas Exhorruit æther,
Et fremuere dij stupuitque Exterritus orbis,
Non est non hominum scelus
Hoc ut tartara cernas.

Id molita nefas, imo de pectore ferræ
Impetus, æquifero venisset flamma Barathro.

Barclaij conlip. angl.

Thus Englished.

Furies and Hell wou'd such a fact deny,
The heaven's trembled at such cruelty,
Gods were enrag'd, ye frightn'd world amaz'd
Not m^n, but hell such villany have rais'd,
Which from Earth Cent^r violently came,
Or from Hell's depth burst forth ye savage
flame.

Remarks on ye 12th day of November being the day of Martins death.

Sol hodie si clarus obit, denunciat Aerem,

Cita; molestum hyemem, si nub-
-ilus aera mitem. predicat hy bern.

Thus in English.

If this day sun sets clear, & winter wild
It doth foretel, if cloudy 'twill be mild.

On Ember weeks.

Ember weeks. the word Ember is by some derived from days of fasting, others from an ancient custom of eating nothing in those days but cakes baked under embers or ashes, called Panem subcineritium or Ember bread.

There be four of those Ember or fasting weeks called in latin Jejunia quatuor Temporum, being the Wednesday, friday and Saturday next after Ashwednes-day, Pentecost, Holy Cross, or September 14th St Lucy's day or December 13th

On Easter Day.

Easter day, the word Easter is Saxon, and as Bede testifieth comes from Goster, or Easter a Godess the Saxon's worshiped in the Spring time wherein this Feast was afterwards kept; but most derive it from the word East, one of Christ's Titles, as in the Prophet, his name shall be called East and as the material Sun ariseth from the East, so the Sun of Righteousness this day arose from the dead.

The antiquity of this Feast is kept very ancient, and was Observed, in the Apostles days

by the name of the Cristian Passover, as appears from that of Saint paul, 1. Cor. verses the 6. 7. 8. Christ our passover is slain for us, let us therefore keep the Feast, not with the Old Leaven, &c.

And in the Early contest about the time of Observing it betwixt the Churches of ye East, and west, they both alledged Apostolick practice, ye former that of Saint John, the latter the rest of the apostles; The sum of which controversie was this.

In the Eastern Churches were Converts from Judaism were very numerous, Easter were

were kept on the same day the Jews celebrated their passover, viz. on the 14th day of the first month, on what day soever it fell, which month began with the Occus or appearance of the moon, whose 14th day was the time of the vernal Equinox, or if none should happen, then that which 14 day came soonest after the vernal Equinox, and those were called Quartodecimani from keeping Easter Quarto decima Lunæ; but most Churches kept it on the Sun day first following the Jewish passover; this difference in the Observing of the Feast caused many warm

Disputes between the Dissenting parties.

Polycarpus Bishop of Smyrna, that was St. John's Disciple, and kept it after the Jewish way, about the Year 165 went to Rome to Confer with Anicetus the Bishop there about it, but without Composing of the matter. In the Year 197. the Controversie was very high, and many Synods were assembled to determine it, by Pope Victor at Rome, Theophilus at Cesarea, Irenaus in France, and by other Bpps in other places, in most of wch it was Carried for Sunday, which Polycratus Bpp. of Ephesus, &

and others mightily oppose of
Asia, whereupon victor of Rome
threatned to excommunicate them;
some say he did, others say that
he dissuaded from it by Irenaeus.
But this did not end ye dissension
but it still increased & continued,
till the time of constantine the
great, when in the General
Council of nice it was carried
against the Asian Bpps, it
being there ordained that Easter
should be kept on the next
Sunday after the first Full moon
which shall happen after the
One and Twentieth of march,
which was the time of ye Vernal
Equinox, agreeable to which
there were Tables Composed

Composed for the Discovery of the Time; but those not so exact but they were often at a loss, and the Pope of Rome received directions from Alexandria Yearly (where were better Astronomers) for stating the week wherein Easter was to be kept.

Till about the year 532 Dionysius Abbas, or Exiguus drew up more Correct Tables and finished a Paschal Cycle for ye Observance of this Feast for ever, which was then Generally Received, and is still in use in the English Church, though it does not answer the Nicene decree, the Golden number (as is before shewn) not

Not truly telling the change of ye
Moon, but is four Days false, &
in Observing Easter the Church
hath respect only to the Cycle of
the new moons, in the first Col-
-umn in the Calendar, and not
to the time in which the really
fall; for so this present Year 1700.
Easter Should be kept on palm
Sunday, a full moon falling
on Saturday the 23 of march;
neither does it answer that part
of the Decree that respects the
Vernal Equinox which by ye
Excess of the Julian Year since
the time of that Council:
has run backwards Eleven
days, falling now on the 10th.
which did then on ye 21st of march

by wch it sometimes falls out that there be two full moons betwixt the said Equinox & Easter Contrary to the primitive Institution of it: to reform which Error ye Church of Rome has not only Cut of the Surplusage of Eleven days from the Kalendar, but Rectified also the Golden Number, and Instead of it has appointed Tables of Epacts to discover the new moons, though in this alteration there is often a day's and sometimes Two days mistake.

The Eclipses of the Sun & moon Calculated for Sixteen Years begining with the Year 1725 and Ending with the Year 1740.

The Year 1725 hath Six Eclipses Viz. Four of the Sun, and Two of the moon. x x x x x x

1725. The first Eclipse happen's on the Sun, the Second of April, at 2. a Clock in the morning.

1725. the second Eclipse happen's on the moon, on the 16. of april at nine a Clock in ye morning Invisible. x x x x x x x x x x

1725. The third Eclipse happen's of the Sun, on the first of may, Invisible at Ten a Clock in the Afternoon. x x x x x x x x x

1725. The fourth Eclipse happen's on the Sun, on Saturday the 25th of September, Invisible. x x x

1725. The Fifth Eclipse happens on the moon, visible on Sunday the 10th of October, begins 29. minutes after 5 in the Even lasts 3, hours 32, minutes, Total darkness one hour, 35. minutes, and the digits Eclipsed will be 21. It will be worth Observation.

1725 The 6th Eclipse happens on the Sun, on the 24th of October at Eleven a Clock at night Invisible.

The year 1726, hath 4. Eclipses viz. Two of the Sun, and Two of the moon. x x x x x x x x

1726. The first Eclipse happens on the Sun, ye 22. of march, at 2. in the afternoon, Invisible.

1726. The second on the moon, on ye 5th of april at one in ye after-noon Invisible. x x x x x x

1726. The third Eclipse happens on the Sun, visible, on wednesday the 14. of september, begins 44 minutes past 4. in ye Evening

Evening, lasts one hour 43 Minutes.

1726. The 4th Eclipse happens on the moon, on Friday the 30th of September, begins 53 Minutes past 3. in the morning, Total Duration 2 hours, 20 minutes, and 52 seconds. x x x x x x

1727. This year hath Two Eclipses and both on the Sun, one Visible, and one Invisible.

1727. The first on Saturday ye 11th of march, at 8. at night, Invisible.

1727. The second Eclipse happen's on munday September the 4th begins 51. minutes past 6. in the morning, lasts one hour 12. minutes, 2. digits and 21. seconds, Eclipsed, visible, if ye air be clear.

1728. This year hath 4. Eclipses, viz. Two of the Sun, and Two of the moon, one visible, and Three Invisible as Followeth.

1728. The first happen's on ye moon on wednesday February ye 14 49 minutes past 5. in ye morn^g^

1728. morning, last 2. hours, and 49 minutes, 9. digits & 13. minutes Eclipsed, if the air be Clear. ☌ ☍

1728. The Second on the Sun, on the 28. of February, at 8. a Clock at Night, Invisible.

1728. The third on the moon, on ye 8. of augus, at 5. in ye Evening Invisible.

1728, The Fourth and last on the Sun, on the 24. of august, at one in the morning, Invisible.

1729. this year hath Five Eclipses, three of the Sun Invisible, and 2. of the moon visible & total.

The first on the Sun, on the 15th of January, at 6. in the morning.

The second on the moon, on Candle mas day, begins 57. past 6. at night, lasts 3. hours 37. minutes, total darkness 1. hour, 32 minutes and 38 seconds.

The third happens on the Sun, on February the Sixteenth, at nine a Clock at night, Invisible.

the 4th on the Sun, on the 15 of July, at one a Clock in the morning Invisible.

The Fifth and last happen's on the moon, on Tuesday the 29th of July, begins 33 minutes past 11 at night, lasts 3 hours 32 Minutes, total darkness, one hour 31 minutes, and Twenty Seconds this Eclipse is worth Observation.

The year 1730 hath 4 Eclipses, viz three of the Sun, & 1 of ye moon.

1730. the first happen's on the Sun, on the 7th of January, at 7. at night a Clock at night, Invisible

1730. The 2d happen's on the moon on Friday the 23d of January, begins 37. minutes past 2. in the morning, partly visible, 3, digits Eclipsed when the Sun Rises.

1730. The 4th on the Sun, on the 28. of December, at 10. in the Forenoon Invisible. Note on the 22d of October, this year mercury will appear like a Spot in the Sun, at 30. minutes past 6. in ye Evening.

The year 1731. hath 4 Eclipses, Two of the Sun, and Two of the moon, as Followeth.

1731. The first happen's on ye. moon on wednesday the 9th. of June, begins 12. minutes past one in the morning, lasts 1. hour 25 minutes, one digit & 52 seconds Eclipsed: visible part if the air be Clear.

1731. The second on the Sun, on the 23. of June, at five a Clock in the morning Invisible.

1731. The third happens on the moon, on the 2d of December, begins 15. minutes before 11. in the morning Invisible. x x x x x x x x

1731. The fourth and last happens on the Sun, on December, at one a Clock at night.

The year 1732, hath five Eclipses, viz. Three of the Sun, and two of the moon, as Followeth.

1732. The first on the moon, the 28th of may, at two in the Evening Invisible.

1732. The second of the sun, the 11th of June, at noon, small and invisible.

1732. The 3d of the sun, the 6. of nov.r in the afternoon invisible. α x

1732. The 4th a total one on y.e moon, on munday the 20th of novemb.r begins 13. minutes past 8. at night, lasts 3. hours & 21. minutes, and 20 seconds, total darkness 1. hour 34. min. & 42. seconds.

1732. The 5th on the sun, Decemb.r the 6. at nine in y.e morning small, and invisible.

The year 1733 hath 4 Eclipses, 2 of the Sun, and 2 of the moon, viz

The first on the Sun, on wednesd.y the 2d of may, begins 42 minutes past 5 in the morning, lasts one hour 45 minutes, 21 seconds, and hath nine Digits Eclipsed.

The second on the moon, on Thursday the 17th of may, begins 25 minutes past 5 in ye Evening lasts 3 hours 1 minute, about 3 digits Eclipsed; at its Rising.

The 3d on the Sun: on the 26 of October, at 1. in ye afternoon, Invis.

The 4. of the moon, on the 10th of October, at 1. in ye afternoon Invisible.

The year 1734, hath Two Eclipses of the Sun and both Invis.

1734. The first on the 22d of april, at 10. in the morning, Invisible

The 2d on Tuesday ye 15th of October, Invisible x x x x

The year 1735, hath 4 Eclipses, Two on the Sun, and Two on the moon.

The first on the moon, on the 27 of march, at Eleven in the Forenoon, Invisible.

The 2d on the Sun, on the Eleven-th of april, at 11. at night, Invisible.

The third on the moon, on Sunday the 21. of September, begins 16. minutes past 12. at night, lasts 2. hours, and 34. minutes.

1735. the 4. on the sun, on the 5th. of October, at two in the morning, Invisible. x x x x

The year 1736. hath 6. Eclipses, 4. on the sun, Invisible, and 2. on the moon, both total & visible.

The first on the sun, on the 1. of march, seen in ye. northern parts.

1736. the second on ye. moon, on munday ye. 15. of march, begins 6. minutes past 10. at night, lasts 3. hours 29. minutes, total darkness 1. hour 35. minutes.

1736. The 3.d on the Sun, on the 31.st of march, at 7. in the morning Invisible.

1736. the 4.th on the Sun, on the 25.th of August, Invisible. x x x x

1736. The 5.th on the moon, total on the 9.th of September, begins 7. minutes past one in the morning lasts 3. hours 49 minutes, total darkness 1. hour, 38. minutes & 50 seconds.

The Sixth on the Sun, Invisible

The year 1737. hath 4. Eclipses Two of the Sun, and Two of the moon, as Followeth. ~ ~ ~ ~ ~

1737. The first on the Sun; on Friday the 18. of February, begins one minute past 2. in the afternoon lasts 2 hours, 41. minutes, 9 digits and 49 seconds, Eclipsed. ~ ~ ~

1737. The 2.d on the moon, on the 5.th of march, 35. minutes past 12. at noon Invisible.

The 3.d on the Sun, on the 16.th of aug.t at one in y.e morning Invisible.

The fourth of the moon, on munday the 29th of august, 34 minutes past 2. in the morning lasts 2. hours and 20. minutes.

The year 1738. hath two Eclipses, and both of the Sun, one visible, and one Invisible.

1738. The first on Tuesday ye 7th of ye February, at 6. at night, Invis.

The second on Friday ye 4th of Augt begins 57. minutes past 9. in the morning, lasts 2. hours 10 minutes, 58 seconds, 4. digits Eclipsed and 8. minutes.

The year 1729 hath 5. Eclipses
three of the Sun, and 2. of ye moon

The first on the moon, on Sattur
day the 13. of January, begins
32. minutes past 9. at night, lasts
2 hours, and 42 minutes, 6. ⅞
Digits Eclipsed. x x x x x x x

The 2d of the Sun, on the 28th of
January, at 4. in the morning

The 3d on the moon, on ye 9th of July
at 4. in the morning, Invisible.

1739. the 4. Eclipse happens on the Sun, on Tuesday the 24.th of July begins 10 minutes past 3. in the Evening, Lasts 2. hours 18. minut: 7 digits and ½ Eclipsed.

1739. The Fifth a small one of the Sun, on wednesday the 19.th of Decembr 10. minutes past 8.th in the morning, lasts one hour 18 Minutes, 2 digits, Eclipsed.

The year 1740. hath 6. Eclipses Three of the Sun, and Three of the moon, as Followeth.

The first on the moon, on Wed-
-nesday the second of January,
begins 30 minutes past 8th at
night lasts 3 hours 49 minutes
total darkness one hour 37 min=
=utes, and 52 seconds.

1740. The second of the sun, on the
8th of January, at 8th at night
Invisible.

1740. The third on the sun, on 1y. 13
of June, at 2. in 1y. morning.

1740. The 4th of the moon, on 1y. 28th
of June, at 9. in the morning.

1740. The 5th on the Sun, on ye 7th of December, at Eleven at night Invisible. x x x x x x x

1740. The ☾ happens on ye moon, on Sunday the 21st of December, begins 32. minutes past 10. at night, lasts 2. hours 32. minutes and 5 digits Eclipsed. & &

Here endeth the Calculation of the Eclipses, Continuing to ye Year 1740.

On the Terraqueous Globe.

Is an artificial Spherical Body, on whose Convex part is truly Represented the whole Surface of the Ball of the Earth; as it Consists of land & water.

That this Globe is term'd Terraqueous from Terra and aqua (the two Constituent parts of its Surface) or Terrestrial to distinguish it from the Celestial; or finally, the artificial Globe as a differencing mark from ye natural or Real Globe of the Earth, are all so notoriously known.

That the least Illustration were wholly Superfluous. & we reckon it also superfluous, to show that there is a true resemblance in Figure, between the artificial and natural Globe, or that the Body of the Earth is truly Spherical:
this being now beyond all dispute, and never (at least very rarely) call'd in question, Except it be only by women, and Children.
Note, that wheresoever we are upon the Surface of the natural Globe, that ye point in the Heavens Exactly vertical to us, Is term'd our Zenith.

And that point diametrically opposite thereto, is stiled our Nadir, which are two Corrupted Arrabian Term's in astronomy, Importing what is here expressed of them.

The first Observables that present themselves to our view in treating of the Globe, are its axis and Poles. × × × ×

The axis is an imaginary line passing through the Center of the Real Globe of ye earth upon w^h ye whole frame there of is supposed to turn about.

Its termed axis from, quod circa illam agitatur Terra.
As this axis in the natural Globe is an imaginary line, so in artificial Globes its a real one, it being a straight piece of Iron, or solid rodd, passing through the middle of the Globe, as the axle-tree of a Wheel.

The Poles are the two extremities of the axis, one whereof is termd the north, or artick, and the other the south, or antartick.

The are called Poles from Verto, because upon them

Then the whole Frame of the Globe turneth round.
the north is Term'd artick signifying a Bear, because ye real North Pole in the Heavens is Commonly taken for a certain noted Star in that constellation which bears the name of the Litle Bear:
and the South is still'd antartick from Contra and arca, because of its diametrical Opposition to the Other.
The Terraqueous Globe being a Spherical Body (as aforesaid) turning round upon its own Axis: but for the better understanding of that Globe in all

Its exterior parts, and the various Opperations performed by the same; we are to conceive it, not only as a bare Spherical Body, but also as such a Body surrounded with many imaginary Circles; the chiefe of wh are Eight, divided into.

Five Parrallels. Viz.
The Equator.
The Two Tropicks.
The Two Polar Circles.
Three not Parrallels.
The Horizon.
The meridian.
The Zodiack.

Otherwise divided into.

Four Greater viz.
The Horizon.
The meridian.
The Equator.
The Zodiack.

Four Lesser viz.
The two Tropicks.
The two polar Circles.

On the Horizon.

The Horizon is that great Circle which divideth the Globe into two equal parts, termd the upper and Lower Hemispheres.

It is so called from Terminans

Vel finiens, quia nostrum terminat prospectum, it being the utmost bounds or limits of our sight when situated in any plain, or at Sea.

This Circle is Twofold, viz. the sensible, and the Rational Horizon:

the Sensible is that, bounding ye utmost prospect of the eye, when viewing the Heaven's round from any part of the Surface of the earth; but the other is purely form'd in the mind, & supposeth the eye to be placed in the very Center of the Earth, beholding the intire upper Hemisphere of the firmament:

The Circle terminating such a prospect is reckoned the true rational Horizon, which is duly represented by that Broad wooden Circle, usually fitted for all Globes.
upon which are inscribed several other Circles, particularly those two containing the name of the months, and number of their days, according to the Julian and Gregorian account; as also that other divided into Thirty two points of ye Compass.

In the Meridian.

The meridian is that great Circle; which passing through the two Poles, divideth the Globe into two Equal parts, termd the Eastern and western Hemispheri.

It is so called from Meridies vel medius dies, because the Sun coming to the meridian of any place, is due South, or maketh mid-day in the said place.

The meridian here designd is that great Brazen Circle, in which the Globe turneth round about the Two Extremities of its axis passing through the said Circle; but y meridian's

Inscribed on the Globe itself, are those Thirty-Six Semi-Circles Terminating in both ye Poles; besides which, we may Imagine as many as we please; only note, that one of those meridians is allways reckned ye first however its matter of Indifference, which of them we take for such.

On the Equator.

Its called Equator, because the Sun coming to this Circle,

Hunc Æquantur noctes & dies, or Æquinoctial for the same reason, viz. Æqualitas noctum cum diebus.

By others its simply termd the line, and that Chiefly by Navigators, as being of singular use in their Operations.

Its divided into 360 degrees, wch are reckoned round the Globe, & beginning at the first meridian, and proceeding Eastward.

This Equator, or Æquinoctial, is that great Circle, wch divideth the Globe into Two equal parts, & is called ye northern & Southern Hemispheres.

On the Zodiack.

The Zodiack is that great broad Circle, which cutteth ye Equinoctial line Obliquely, one side thereof Extending it self exactly so far North, as the other doth to ye South of the said line. - - - - - - - -

It is so called from (Animal) because its adorned with Twelve Asterisms (Commonly termed ye Twelve Signs) being most of them Representations of divers animals. The names and Characters of ye Signs are as Followeth. - -

Aries. Taurus. Gemini: Cancer.

♈ ♉ ♊ ♋

Leo. virg. Libra. Scorpio. Sagittarius

♌ ♍ ♎ ♏ ♐

Capricorn. Aquarius. Pisces.

♑ ♒ ♓

If all Circles Inscribed on either of the Globes, this alone admitts of Lattitude, and is divided in the midle by a Concentrik Circle, termed ye Ecliptick, Which properly is that Circle set upon the Globe, Comprehending the Characters of the twelve Signs above mentioned, Each of which

Which Signs is 1/12 part of that Circle, and contains 360 Degrees.

The Tropicks are the Two biggest of the Four lesser Circles, which Run Parrallel to the Equator, & are Equidistant therefrom.

They're termd Tropick's from, (verte) because the Sun in his Annual Course arriving at one of those Circles, Doth return towards the Other.
They derive their respective Denomination's of Cancer, & Capricorn, from touching ye Zodiack at the two Sign's of that name, & each

of them is distant from ye Equator exactly 23 degrees and a half.

On the Polar Circles.

The Polar Circles are the two least of the four lesser Circles running Parallel to the Equator, and at the same distance from ye Poles, as the Tropicks are from the Equator.

They're termd Polar, because of their vicinity to ye Poles.
That Circle nearest the north,

North, is called the arctick, and the other next to the South pole, the antarctick Polar Circle, and that for the same Reason alledg'd given, when treating of the poles themselves.

These are the eight necessary Circles above mentioned; but to Compleate the furniture of the Globe, there remain as yet three particulars, viz. the horary Circle, the Quadrant of altitude, and Semi Circle of Position.

On the Horary Circle.

The horary Circle is a small Circle of Brass, and so affixt to the Brazen meridian, that the Pole (or end of the axis) proves its Center.

Upon this Circle are Inscribed the Twenty four hours of the natural Day at Equal distance from One another; the Twelfth for mid-day being in ye upper part towards the Zenith, and the other part for mid-night in the Lower towards ye Horizon So that the hours in ye Forenoon are towards the Eastern, or in the eastern part; and those for the afternoon in the

The afternoon in the western Semy-Circle: as for an Index to this Horary Circle, the same is fixd upon the end of the axis, and turneth round wth the Globe.

The Quadrant of altitude.

The Quadrant of altude is a narrow thin plate of pliable Brass, exactly answerable to to one fourth part of the Equinoctial.

Upon this Quadrant, are Inscrib'd 90 degrees, each of them being according to the same Scale w.th those upon y.e Equator.

On the Semi Circle

The Semi Circle of Position is a narrow Solid plate of Brass Exactly answerable to one half of the Equinoctial.

Upon this Semi Circle are Inscrib'd 180 degrees, exactly the same w.th those upon y.e Equinoctial.

We may term it a double Quadrant of altitude in some respect, and its of Considerable use in several delightfull problems.

To these I might add the mariners Compass, that most necessary Instrument, Commonly used by Navigators, which being duly touch't with the Loadstone, and horizontally fixt upon the Pedestal of globe is frequently needfull for the right solution of several Excellent Problem's.

On Lattitude.

Lattitude is the distance from the Equator to either of the Poles, and measured upon the Brazen, or first meridian.

No term is more frequently used in Geography than that of Lattitude, which is two fold, viz. north and South.

In reckoning of the northern Lattitude, you are to begin at the Equinoctial line, and proceed to the arctick; and the southern

Southerne from ye Equinoctial to the antarctick pole, still numbring the degrees of Lattitude, either upon the Brazen, or first meridian.

the many Circles inscribed on the Globe, at the distance of Ten Degrees from one another, and Parallel to the Equator, are termed Parallels of Lattitude. but besides those actualy inscribed, we are to conceive the Globe is furnish't with a vast multitude of such Circles, for every degree of Lattitude, yea, and every Sixtieth part of each degree, is supposed to have an Imaginary Parallel Circle -

passing through ye same.
but since Lattitude (as aforesaid)
is the distance from the Equator
to either of the Poles; it from-
hence follows, that the greatest
Lattitude consisteth of 90 degrees.
Now correspondant to each of
those degrees or the 360 part
of a great Circle in the heavens)
is a certain space of ye Surface
of the earth, which is every where
of the same extent in it self,
but differant in its number of
parts, according to the differant
reckoning of various Countries.
to know the said differant num-
ber of parts, (of what sort soever
wch either the be miles, Leagues-

Leagues, or other measures) Corresponding to one degree in the Heavens, is absolutely necessary for the right understanding of the true distance of places in different Countries; we shall therefore Illustrate the same, and that by the following Table.

Answerable to one degree, are.	
Common Italian, English, and Turkis miles.	60.
Ordinary French leagues.	20.
Spanish miles according to vulgar reckoning.	17½.

German, Dutch, Danish, and great Poland miles. 15.

Miles used in Swedeland. 12

Miles usual in hungary. 10.

The verstes of muscovy, 80.

Persian, Arabian, and Egyptian Parasanga. 20.

The Indian Cos. 24.

The Stades of China. 250.

The Ingis of Japan. 400.

But here note, that though these are the most remarkable measures of distance throughout ye inhabitted world, with their respective proportion to one degree in the Heavens; yet, we are not to imagine that these measures are of the same extent in the various Provinces of the same Country, as is Evident from the different Length of Leagues in different parts of France; as also the diversity of miles in the South and North of England.

On Longitude.

Longitude is the distance from the first meridian, and measured upon the Equator.

In reckoning the various degrees of Longitude (which are 360 in all) you are to begin at ye first meridian where ever it is, and to proceed upon the Equator quite round the Globe.

Correspondent to each of those Degrees in the Equator (as to Degrees of Latitude on ye meridian) are 60 Italian miles, or 20 French Leagues, according to vulgar Calculation: but this is to be understood only of places exactly under the Equator

Equator: for the true distance between Two places lying due East and west in any Considerable Lattitude as far less in miles than between Other two places lying Exactly under the Equator, and likewise the same meridians; the reason of which is most Evident, namely the approaching of ye meridians nearer and nearer to one another till at last the unite all under the Pole.

But that you may readily find the true distance in miles from East to west between any two Places in any Parallel of Lattitude,

Zones are large tracts of the Surface of the Earth, lying parallel to the Equator, & distinguish'd by ye four lesser Circles of ye Globe.

These termd Zones from Zona vel Singulum) because ye Compass the Globe of the Earth in some manner, as a girdle doth surround the Body of a man; and are in number five.

Viz.

Two Frigid.
Two Temperate
One Torrid.

Comprehended between.
The Polar Circles, and ye Poles.
The Polar Circles & the Tropicks.
The two tropicks, and divided
by the Equator.
Of these the ancients imagin'd
Only the two temperate to be
Habitable; esteeming ye Scorch^g
heat of the Torrid, and pinching
Cold — of the two Frigid to be equally
Intollerable; according to that
Quarum quæ media est, nemo est
Habitabilis æstu:
Nive tegit alta duas. Ovid metam. I

On the Climates.

Climates are those Tracts of the Surface of the earth, bounded by imaginary Circles, running Parallel to the Equator, and of such a Breath from south to north that the Length of the artificial Day in one surpaseth that in ye other, by half an hour.

They're term'd Climates from Decline vel incline) because in numbering of them they Decline from the Equator, and incline to other pole.

Not to mention what ye ancients taught of Climates either as to their number, or manner of

reckoning them; its sufficient for our present purpose to consider that modern Geographers have enlarged the number of them to 60.

From the Equator to each of the Polar Circles; are 24 arising from the Difference of a ½ hour in the Longest Day; and from ye polar Circles to the Poles themselves. are six arising from ye Difference of an intire month, the Sun being seen in the first of these a whole month without setting in the second two, and in the three three months, &c^a.

Now all these Climates are from viz. ye true parallel of Latitude

in which — ye End.

Having thus taken a view of the Chief Circles belonging to the Terrestrial Globe, as also ye manner how Lattitude and Longitude with Zones and Climates are framed; proceed we next to the various position's of ye Globe, Commonly termed Spheres, which are three in number, viz. Parallel, Right, and Oblique.

A Parallel sphere is that Position of the Globe, which hath three Properties, viz. (1.) the poles in the Zenith and nadir: (2.) ye Equator in the Horizon: (3.) the Parallel Circles Parallel to the Horizon.

The Inhabitants of this Sphere are those (if any) who live under the two poles. x x x x x x x x x

A right Sphere is that Position of ye which hath these three properties, viz. (1.) both the Poles in ye horizon. (2.) the Equator passing through the Zenith and nadir. (3.) the Parrallel Circles perpendicular to the Horizon.

The Inhabitants of this Sphere, are they who live under the Equinoctial line. x x x x x x x

An Oblique Sphere is that Position of the Globe, which hath these

Three Properties viz. (1.) one of the poles above, and the other under the Horizon.
(2.) the Equator partly above, & partly under the the Horizon.
(3.) the Parallel Circles cutting ye Horizon Obliquely.
The inhabitants of this Sphere are they, who live in all parts of the Globe of the Earth, except those exactly under the Poles, and equinoctial line.

But having no regard to these Positions of the Globe; the various Inhabitants of the earth are likewise considered wth respect

respect to the several meridians and Parallels peculiar to their Habitations, and that under the three titles, viz. Antaeci, Periaeci, and Antipodes.

The Antaeci are those People of the Earth, who live under ye same Meridian, but Opposite parallels.

Peculiar to such people are these following particulars, viz. (1) the have both the same Elevation of the Pole, but not the same Pole. (2) they are equally distant from ye Equator, but on different sides, (3) they have both noon & midnight at the same time.

The Full Change and Quarter of the Moon Synodically Calculated for 16 Years Commencing with y.e Year 1725. and ending with y.e Year 1740. Collected by y.e Hon.ble Brigad.r Gen.l Stearne at his Majesties Royal Fort of Duncannon 1724.

January 1725. Sun in Aquarius

New moon " 3 " at " 11 " morning
First Quarter " 10 " at " 8 " Evening
Full moon " 17 " at " 1 " Evening
Last Quarter " 25 " at " 4 " Morning.

February 1725. Sun in Pisces.

New moon " 2 " at " 3 " morning
First Quarter " 9 " at " 3 " morning
Full moon " 16 " at " 2 " morning
Last Quarter " 24. " at " 3 " morning

March 1725. Sun in Aries.

New moon " 3 " at " 4 " Evening
First Quarter " 10 " at " 10 " morning
Full moon " 17 " at " 5 " Evening
Last Quarter " 25 " at " 9 " morning

April 1725. Sun in Taurus.

New moon „ 2 „ at „ 2 „ morning
First Quarter „ 8 „ at „ 5 „ Evening
Full moon „ 16 „ at „ 9 „ morning
Last Quarter „ 24 „ at „ 11 „ morning

May 1725. Sun in Gemini.

New moon „ 1 „ at „ 10 „ morning.
First Quarter „ 8 „ at „ 2 „ morning.
Full moon „ 16 „ at „ 1 „ morning.
Last Quarter „ 24 „ at „ 2 „ morning.
New moon „ 30 „ at „ 5 „ Evening.

June Sun in Cancer 1725.

First Quarter „ 6 „ at „ 1 „ Evening
Full moon „ 14 „ at „ 4 „ Evening
Last Quarter „ 22 „ at „ 10 „ morning
New moon „ 28 „ at „ 12 „ at night.

July 1726. Sun in Leo.

First Quarter „ 6 „ at „ 2 „ morning
Full moon „ 14 „ at „ 6 „ morning
Last Quarter „ 21 „ at „ 5 „ Evening
New moon „ 28 „ at „ 8 „ Evening.

August 1725. Sun in Virgo.
First Quarter „ 4 „ at „ 5 „ Evening
Full moon „ 12 „ at „ 9 „ Evening
Last Quarter „ 19 „ at „ 10 „ Evening
New moon „ 26 „ at „ 6 „ Evening.

September 1725. Sun Libra.
First Quarter „ 3 „ at „ 11 „ morning
Full moon „ 11 „ at „ 7 „ morning
Last Quarter „ 18 „ at „ 4 „ morning
New moon „ 25 „ at „ 7 „ morning.

October 1725 Sun in Scorpio.
First Quarter " 3 " at " 8 " morning
Full moon " 10 " at " 7 " Evening
Last Quarter " 17 " at " Noon
New moon " 24 " at " 11 " Evening.

November 1725 Sun in Sedgitt.
First Quarter " 2 " at " 3 " morning
Full moon " 9 " at " 6 " morning
Last Quarter " 16 " at " 2 " morning
New moon " 23 " at " 5 " Evening.

December Sun in Capricorn 1725.
First Quarter " 2 " at " 8 " Evening
Full moon " 8 " at " 4 " Evening
Last Quarter " 15 " at " 11 " morning
New moon " 23 " at " Noon.
First Quarter " 31 " at " 11 " Morning.

Here Endeth the Synodical Calculation of the Change, Full and Quarters of the moon, for the year 1725.

The Change, Full, and Quarter of the moon Calculated for the Year, 1726. are as Followeth.

January, 1726. Sun in Aquarius.
Full moon " 7 " at " 2 " Morning.
Last Quarter " 14 " at " 2 " Morning.
New moon " 22 " at " 7 " Morning.
First Quarter " 29 " at " 10 " Evening.

February 1726. Sun in Pisces.

Full moon „ 5 „ at „ 1 „ Evening

Last Quarter „ 12 „ at „ 9 „ Evening

New moon „ 20 „ at „ 12 „ Evening

First Quarter „ 28 „ at „ 6 „ Morning

March Sun In aries 1726.

Full moon „ 7 „ at „ 1 „ morning

Last Quarter „ 14 „ at „ 5 „ Evening

New moon 22 „ at „ 2 „ Evening

First Quarter „ 29 „ at „ 5 „ Evening.

April 1726. Sun in Taurus.
Full moon " 5 " at " 1 " Evening
Last Quarter " 13 " at " Noon
New moon " 21 " at " 2 " morning
First Quarter " 27 " at " 6 " Evening

May 1726. Sun In Gemini.
Full moon " 5 " at " 2 " morning
Last Quarter " 13 " at " 5 " morning
New moon " 20 " at " 11 " morning
First Quarter " 27 " at " 1 " morning

June 1726. Sun in Cancer. ∝ ∝
Full moon „ 3 „ at 4 „ Evening
Last Quart.r „ 11 „ at 8 „ Evening
New moon „ 18 „ at 6 „ Evening
First Quarter „ 25 „ at 9 „ morning

July 1726. Sun In Leo. ∝ ∝ ∝ ∝
Full moon „ 3 „ at „ 7 „ Morning
Last Quarter „ 11 „ at „ 8 „ Morning
New moon „ 17 „ at „ 12 „ Evening
First Quarter „ 24 „ at „ 8 „ Evening

August 1726. Sun in Virgo

Full moon " 1 " at " 11 " Evening
Last Quarter " 9 " at " 5 " Evening
New moon " 16 " at " 8 " morning
First Quarter " 23 " at " 9 " morning
Full moon " 31 " at " 2 " Evening

September 1726. Sun in Scorpio.

Last Quarter " 8 " at " 1 " morn.
New moon " 14 " at " 5 " Evening
First Quarter " 22 " at " 4 " morning
Full moon " 30 " at " 5 " morning

October 1726. Sun in Sedgit.s

Last Quarter „ 7 „ at „ 8 „ morning
New moon „ 14 „ at „ 4 „ morning
First Quarter „ 21 „ at „ 11 „ Evening
Full moon „ 29 „ at „ 7 „ Evening.

November 1726. Sun in Capricorn.

Last Quarter ~ „ 5 „ at „ 3 „ Evening
New moon ~ „ 12 „ at „ 5 „ Evening
First Quarter „ 20 „ at „ 9 „ Evening
Full moon „ 28 „ at „ 8 „ morning

December 1726. Sun in Aquarius
Last Quarter „ 4 „ at „ 12: at night
New moon „ 12 „ at „ Noon.
First Quarter „ 20 „ at „ 11 „ Evening
Moon at Full „ 27 „ at „ 7 „ Evening

Here endeth the Calculation of the Change and Full and Quarters of the moon for the Year 1726.

Here beginneth the Calculation for the Change Full and Quarters of the moon, for the Ye. 1727.

January Sun in aquarius 1727.
Last Quarter " 3 " at " 10 " morning
New moon " 11 " at " 7 " morning
First Quarter " 19 " at " 10 " morning
Full moon " 26 " at " 5 " morning.

February 1727 Sun in Pisces

Last Quarter " 1 " at 12 at night
New moon " 10 " at " 1 " morning
First Quarter " 17 " at " 10 " Evening
Full moon " 24 " at " 3 " Evening

March 1727 Sun in Aries

Last Quarter " 3 " at " 2 " Evening
New moon " 11 " at " 8 " Evening
First Quarter " 19 " at " 9 " morning
Full moon " 26 " at " 1 " morning

April 1727. Sun In Taurus.

Last Quarter " 2 " at " 8 " morning
New moon " 10 " at " 11 " morning
First Quarter " 17 " at " 5 " Evening
Full moon. " 24 " at " 11 " morning

May, 1727. Sun In Gemini.

Last Quarter " 2 " at " 2 " morning
New moon " 9 " at " 12 " Evening
First Quarter " 16 " at " 10 " Evening
Full moon " 23 " at " 10 " Evening
Last Quarter " 31 " at " 7 " Morning

June 1727. Sun In Cancer.

New moon „ 8 „ at „ 9 „ morning
First Quarter „ 15 „ at „ 3 „ morning
Full moon „ 22 „ at „ 10 „ morning
Last Quarter „ 30 „ at „ Noon

July 1727. Sun In Leo.

New mon „ 7 „ at „ 5 „ Evening
First Quarter „ 14 „ at „ 8 „ morning
Full moon „ 21 „ at „ 11 „ Evening
Last Quarter „ 30 „ at „ 8 „ morning.

August 1727. Sun In Virgo

New moon „ 6 „ at „ 1 „ morning
First Quarter „ 12 „ at „ 4 „ Evening
Full moon „ 20 „ at „ 3 „ Evening
Last Quarter „ 28 „ at „ 3 „ Evening

September 1727. Sun In Libra.

New moon „ 4 „ at „ 8 „ morning
First Quarter „ 11 „ at „ 4 „ morning
Full moon „ 19 „ at „ 8 „ morning
Last Quarter „ 27 „ at „ 2 „ morning

October 1727. Sun in Scorpio.

New moon „ 3 „ at „ 6 „ Evening
First Quarter „ 10 „ at „ 8 „ Evening
Full moon „ 19 „ at „ 1 „ morning
Last Quarter „ 26 „ at „ Noon.

Novemb.r 1727. Sun in Sagittarius

New moon „ 2 „ at „ 5 „ morning
First Quarter 9 „ at „ 3 „ Evening
Full moon „ 17 „ at „ 5 „ Evening
Last Quarter „ 24 „ at „ 8 „ Evening

December 1727. Sun in Capricorn
New moon " 1 " at " 5 " Evening
First Quarter " 9 " at " 1 " Evening
Full moon " 17 " at " 8 " morning
Last Quarter " 24 " at " 4 " morning
New moon " 31 " at " 8 " morning.

Here endeth ye Calculation of the Full, Change, and Quarters of the moon, for ye Year. 1727.

Here beginneth the Calculat. of the Change, Full, and Quarters of the moon Synodical & according to the moons mean motion, for the Year 1728.

January 1728, Sun in aquarius.

First Quarter	7	at	10	Evening
Full moon	15	at	8	Evening
Last Quarter	22	at	6	Morning
New moon	29	at	9	Evening

February 1728 Sun in Pisces.
February First Quart.r 6 at 3 morn
Full moon 14 at 5 morning
Last Quarter 21 at 2 Evening
New moon 28 at 8 Evening.

March 1728. Sun Aries
First Quarter 7 at 1 morning
Full moon 14 at 11 morning
Last Quarter 21 at 8 Evening
New moon 29 at 2 morning

April Sun in Taurus, 1728 —
First Quarter " 5 " at " 11 " morning
Full moon " 12 " at " 12 " at night.
Last Quarter " 20 " at " 2 " morning
New moon " 27 " at " 2 " Evening

May 1728. Sun In Gemini —
First Quarter " 4 " at " 11 " Evening
Full moon " 12 " at " 10 " morning
Last Quarter " 19 " at " 7 " Evening
New moon " 27 " at " 3. " morning

June 1728. Sun In Cancer

First Quarter " 3 " at " Noon

Full moon " 10 " at " 10 " Evening

Last Quarter " 18 " at " 7 " Morning

New moon " 25 " at " 4 " Evening

July 1728. Sun In Leo

First Quarter " 3 " at " 2 " morning

Full moon " 10 " at " 8 " morning

Last Quarter " 17 " at " 5 " Evening

New moon " 25 " at " 3 " Evening

August 1728 Sun in Virgo —
First Quarter „ 1 „ at „ 10 „ Evening
Full moon „ 8 „ at „ 5 „ Evening
Last Quarter „ 16 „ at „ 2 „ morning
New moon „ 24 „ at „ 1 „ morning
First Quarter „ 31 „ at „ 10 „ morning.

September Sun in Libra 1728. —
Full moon „ 7 „ at „ 8 „ Evening
Last Quarter „ 15 „ at „ 5 „ morning
New moon „ 22 „ at „ 2 „ Evening
First Quarter „ 29 „ at „ 11 „ Evening.

October 1728. Sun in Scorpio.

Full moon " 7 " at " 8 " morning.
Last Quarter " 14 " at " 5 " Evening.
New moon " 22 " at " 2 " morning.
First Quarter " 29 " at " 11 " morning.

November 1728. Sun in Sedgittarius.

Full moon " 5 " at " 8 " Evening.
Last Quarter " 13 " at " 6 " morning.
New moon " 20 " at " 2 " Evening.
First Quarter " 27 " at " 11 " Evening.

December 1728 Sun Capricorn.
Last Quarter " 5 " at " 8 " morning
New moon " 12 " at " 5 " Evening
First Quarter " 20 " at " 2 " morning
Full moon " 27 " at " 11 " morning.

Here Endeth the Calculation of the Change, Full and Quarter of the moon for the Year 1728.

Here biginneth, Calculations of the Change of the moon, Full, & Quarters of the moon Synodically Calculated for the year 1729.

January 1729. Sun in Aquarius
Full moon " 4 " at " 8 " Evening
Last Quarter " 11 " at " 1 " morning
New moon " 18 " at " 6 " morning
First Quarter " 25 " at " 3 " Evening

February 1729. Sun in Pisces.
Full moon " 2 " at " 6 " Evening
Last Quarter " 10 " at " 3 " Morning
New moon " 17 " at " Noon.
First Quarter " 24 " at " 9 " Evening.

March 1729. Sun in Aries.
Full moon " 3 " at " 6 " morning
Last Quarter " 10 " at " 3 " Evening
New moon " 17 " at " 12 " Night
First Quarter " 25 " at " 9 " morning
Full moon " not again in this Month.

April 1729. Sun in Taurus.
Full moon " 1 " at " 6 " Evening
Last Quarter " 9 " at " 3 " Morning
New moon " 16 " at Noon
First Quarter " 23 " at " 9 " Evening.

May 1729. Sun In Gemini
Full moon " 1 " at " 6 " Morning
Last Quarter " 8 " at " 3 " Evening
New moon " 16 " at " 12 " Night
First Quart.r " 23 " at " 9 " Morning
Full moon " 30 " at " 6 " Evening

June 1729. Sun In Cancer. ♋ ♋

Last Quarter " 7 " at " 3 " Evening
New moon " 14 " at " 12 " at night
First Quarter " 21 " at " past " 11 " Evening
Full moon " 29 " at " 6 " Evening

July 1729. Sun In Leo. ♌ ♌ ♌

Last Quarter " 7 " at " 4 " Evening
New moon " 13 " at " 1 " morning
First Quarter " 22 " at " 10 " morning
Full moon " 29 " at " 7 " Evening

August 1729. Sun in virgo. ♌
Last Quarter 6 at 4 morning ♃
New moon 13 at 1 Evening ♄
First Quarter 20 at 10 Evening ♂
Full moon 28 at 7 morning ♀

September 1729. Sun in Libra. ♎
Last Quarter 4 at 4 Evening ♃
New moon 12 at 2 morning ♄
First Quarter 19 at 11 morning ♂
Full moon 26 at 5 Evening ♀

October 1729. Sun In Scorpio.
Last Quarter " 4 " at " 5 " morning
New moon " 11 " at " 2 " Evening
First Quarter " 18 " at " 11 " Evening
Full moon " 26 " at " 8 " morning

November 1729. Sun in Sedgittarius
Last Quarter " 2 " at " 5 " Evening
New moon " 10 " at " 5 " morning
First Quarter " 17 " at " 2 " Evening
Full moon " 24 " at " 11 " Evening

Decemb^r 1729. Sun in Capricorn
Last Quarter " 2 " at " 8 " morning
New moon " 9 " at " 5 " Evening
First Quarter " 17 " at " 2 " morning
Full moon " 24 " at " 11 " morning
Last Quarter " 31 " at " 1 " Evening

Here Endeth the Synodical Calculation of the Change, Full, & Quarters of the moon for the Year 1729.

Here beginneth the Calculation of the Change, Full & Quarters of the moon for the year 1730.

1730 January Sun in aquarious

New moon 7 at 10 Evening
First Quarter 15 at 7 morning
Full moon 23 at 2 morning
Last Quarter 29 at 12 at night.

February 1730, Sun in Pisces.

New moon 6 at 9 morning

First Quarter 13 at 6 Evening

Full moon 21 at 3 morning

Last Quarter 28 at Noon.

March 1730, Sun in Aries.

New moon 7 at 11 Evening

First Quarter 15 at 5 morning

Full moon 22 at 5 Evening

Last Quarter 30 at 2 morning

April 1730 Sun In Taurus.
New moon 6 at 11 morning
First Quarter 13 at 8 Evening
Full moon 21 at 5 morning
Last Quarter 28 at 2 Evening

May 1730 Sun In Gemini
New moon 6 at 11 Evening
First Quarter 13 at 6 morning
Full moon 20 at 4 Evening
Last Quarter 28 at 2 morning

June 1730 Sun In Cancer.

New moon 4 at 11 morning

First Quarter 11 at 8 Evening

Full moon 20 at 5 morning

Last Quarter 27 at 1 Evening

July 1730. Sun in Leo.

New moon 4 at 2 morning

First Quarter 11 at 11 morning

Full moon 18 at 7 Evening

Last Quarter 26 at 4 morning

August 1730. Sun in Virgo.

New moon " 2 " at " 2 " Evening.
First Quarter " 9 " at " 11 " Evening.
Full moon " 17 " at " 8 " morning.
Last Quarter " 24 " at " 5 " Evening.

September 1730. Sun in Libra.

New moon " 1 " at " 2 " morning.
First Quarter " 8 " at " 11 " morning.
Full moon " 15 " at " 8 " Evening.
Last Quarter " 23 " at " 5 " morning.
New moon " 30 " at " 2 " Evening.

October 1730, Sun in Scorpio.

First Quarter 7 at 11 Evening

Full moon 15 at 8 morning

Last Quarter 22 at 5 Evening

Full moon 30 at 3 morning

November 1730. Sun in Sagittarius

First Quarter 6 at Noon.

Full moon 13 at 9 Evening

Last Quarter 21 at 6 morning

New moon 28 at 3 Evening

December 1730. Sun in Capricorn.
First Quarter " 5 " at " 12. Night
Full moon " 13 " at " 9 " morning
Last Quarter " 20 " at " 6 " Evening
New moon " 28 " at " 10 " morning

Here endeth the Calculation of the Change, Full, & Quarters of the moon for ye. Year 1731.

January 1731. Sun in aquarius. ♒
First Quarter 4 at 7 Evening ☽
Full moon 12 at 4 morning ○
Last Quarter 19 at 1 Evening ☾
New moon 26 at 10 Evening. ●

February 1731 Sun in Pisces ♓
First Quarter 3 at 7 morning ☽
Full moon 10 at 4 Evening ○
Last Quarter 17 at 12 Night ☾
New moon 25 at 10 Morning ●

March 1731. Sun in Aries. ♈ ♈ ♈
First Quarter 4 at 7 morning
Full moon 12 at 4 Evening
Last Quarter 19 at 1 Evening
New moon 26 at 12 Night.

April 1731. Sun in Taurus. ♉ ♉
First Quarter 2 at 8 morning
Full moon 9 at 4 Evening
Last Quarter 17 at 1 morning
New moon 24 at 10 Evening.

May 1731 Sun In Gemini

First Quarter 2 at 10 morning

Full moon 9 at 9 Evening

Last Quarter 17 at 8 morning

New moon 24 at 6 Evening

June 1731 Sun In Cancer

First Quarter 1 at 10 morning

Full moon 9 at 1 morning

Last Quarter 16 at 2 morning

New moon 23 at 5 morning

First Quarter 30 at 3 Evening

July 1731 Sun In Leo.

Full moon 7 at 12 night.
Last Quarter 15 at 9 morning
New moon 22 at 7 Evening
First Quarter 30 at 4 morning

August 1731 Sun In virgo.

Full moon 6 at 2 Evening
Last Quarter 13 at 11 Evening
New moon 21 at 9 morning
First Quarter 28 at 6 Evening.

September 1731. Sun in Libra. x x
Full moon " 5 " at " 4 " morning x
Last Quarter " 12 " at " 1 " Evening x
New moon " 19 " at " 10 " Evening x
First Quarter " 27 " at " 8 " morning x

October 1731. Sun in Scorpio. x x x
Full moon " 4 " at " 5 " Evening x
Last Quarter " 12 " at " 2 " morning x
New moon - " 19 " at " 11 " morning x
First Quarter " 26 " at " 5 " Evening x

November 1731 Sun Sagittarius.
Full moon 3 at 5 morning
Last Quarter 10 at 2 Evening
New moon 17 at 11 Evening
First Quarter 25 at 8 morning

Decemb.r 1731 Sun Capricorn
Full moon 2 at 10 morning
Last Quarter 9 at 7 Evening
New moon 18 at 1 morning
First Quarter 25 at 10 morning

Here beginneth the Calculation of the Change, Full, and Quarters of the moon For the Year 1732 &

Full moon 1 at 7 Evening &
Last Quarter 9 at 4 morning
New moon 16 at 1 Evening &
First Quarter 23 at 10 Evening &
Full moon 31 at 8 morning &
January 1732, Sun in aquarius.

February 1732 Sun in Pisces

Last Quarter " 7 " at " 5 " Evening

New moon " 15 " at " 3 " morning

First Quarter " 22 " at " Noon.

Full moon " 29 " at " 12 Night

March 1732 Sun in Aries

Last Quarter " 8 " at " 8 " morning

New moon " 15 " at " 5 " Evening

First Quart^r " 23 " at " 1 " morning

Full moon " 30 " at " Noon.

April 1732. Sun In Taurus

Last Quarter 6 at 12 night.

New moon 14 at 9 morning

First Quarter 21 at 6 Evening

Full moon 29 at 3 Morning

May 1732. Sun In Gemini

Last Quarter 6 at noon.

New moon 13 at 9 Evening

First Quarter 21 at 6 morning

Full moon 28 at 2 Evening.

June 1732 Sun In Cancer ♋

Last Quarter " 4 " at " 3. morning

New moon " 11 " at " Noon. ♎

First Quarter " 18 " at " 9 " Evening

Full moon " 26 " at " 6 " Morning.

July 1732. Sun In Leo. ♌

Last Quarter " 3 " at " 3 " Evening ♎

New moon " 11 " at " 1 " morning ♌

First Quarter " 18 " at " 10 " morning ♎

Full moon " 25 " at " 8 " Evening ♎

August 1732 Sun in Virgo.

Last Quarter 2 at 5 morning

New moon 9 at 2 Evening

First Quart 16 at 11 Evening

Full moon 24 at 8 morning

Last Quarter 31 at 8 Evening

Septemb.r 1732. Sun in Libra

New moon 8 at 5 morning

First Quarter 15 at 12 Evening

Full moon 22 at 12 Night

Last Quarter 30 at 9 morning

October 1732 Sun in Scorpio

New moon " 7 " at " 6 " Evening ☾

First Quarter " 15 " at " 3 " Morning ☾

Full moon " 22 " at " noon

Last Quarter " 29 " at " 12 " night

November 1732. Sun in Sedgittarius ♐

New moon " 6 " at Noon.

First Quarter " 13 " at " 4 " Evening ☾

Full moon " 20 " at " 8 " Evening ☾

Last Quarter " 28 " at " 5 " morning ☾

December 1732. Sun in Capricorn

New moon „ 6 „ at „ 9 „ Morning

First Quarter „ 13 „ at „ 6 „ Evening

Full moon „ 21 „ at „ 3 „ Morning

Last Quarter „ 28 „ at „ Noon.

Here endeth the Calculation of the Full, Change, and Quarters of the Moon, for the Year 1732.

Here beginneth the Lyne Dical Calculation on the full, change and Quarter of the moon, for y.e Year 1733

January 1733. Sun in Aquarius. ♒

New moon " 4 " at " 9 " Evening ☾

First Quarter " 12 " at " 6 " morning ☽

Full moon " 19 " at " 5 " Evening ○

Last Quarter " 27 " at " 2 " morning ☾

February 1733 Sun in Pisces. ∞ ∞
New moon " 3 " at " 12 " night
First Quarter " 11 " at " 9 " morning
Full moon " 18 " at " 6 " Evening
Last Quarter " 27 " at " 3 " morning

March 1733 Sun in Aries. ∞ ∞ ∞
New moon " 6 " at noon
First Quarter " 13 " at " 9 " Evening
Full moon " 21 " at " 6 " morning
Last Quarter " 28 " at " 3 " Evening

April Sun in Taurus. 1733.

New moon „4„ at „12„ night
First Quarter „12„ at „3„ morning
Full moon „17„ at „6„ Evening
Last Quarter „25„ at „4„ morning.

May 1733. Sun In Gemini.

New moon „2„ at „5„ morning.
First Quart „9„ at „4„ Evening
Full moon „17„ at „3„ Evening
Last Quarter „24„ at „12„ night.

June 1733 Sun In Cancer.

New moon 1 at 9 morning

First Quarter 8 at 6 Evening

Full moon 16 at 3 morning

Last Quarter 23 at noon

New moon 30 at 10 Evening

July 1733. Sun In Leo.

First Quarter 8 at 7 morning

Full moon 16 at 4 Evening

Last Quarter 23 at 2 morning

New moon 30 at Noon

August 1733, Sun In Virgo
First Quarter " 6 " at " 9 " Evening
Full moon " 14 " at " 6 " morning
Last Quarter " 21 " at " 3 " Evening
New moon " 28 " at " 12 " night.

September 1733, Sun in Libra
First Quarter " 5 " at " 9 " morning
Full moon " 12 " at " 6 " Evening
Last Quarter " 20 " at " 3 " morning
New moon " 27 " at " 1 " Evening

October 1733 Sun in Scorpio.

First Quarter 4 at 10 Evening

Full moon 10 at 1 Evening

Last Quarter 18 at Noon.

New moon 26 at 6 Evening

November 1733. Sun in Sagittarius

First Quarter 2 at 12 night.

Full moon 10 at 9 morning

Last Quarter 17 at 6 Evening

New moon 25 at 3 morning

December 4 1733. Sun in Capricorn
First Quarter 2 at 12 noon
Full moon 9 at 9 Evening
Last Quarter 17 at 6 morning
New moon 24 at 3 Evening
First Quarter 31 at 12 at night.

Here endeth the Calculation
of the Full, Change, & Quarters
of the moon for the Year 1733.

Here beginneth ye Calculation of the Full, Change, and quarters of the moon for the year 1734

January 1734. Sunn in aquarius

Full moon	8	at	9	Morning
Last Quarter	15	at	6	Evening
New moon	23	at	3	morning
First Quarter	30	at	1	Evening

February 1734 Sun in Pisces.

Full moon " 6 " at " 10 " Evening
Last Quarter " 14 " at " 6 " morning
New moon " 21 " at " 4 " morning
First Quarter " 28 " at " 12 " at night.

March 1734 Sun in Aries.

Full moon " 8 " at " 9 " morning
Last Quarter " 16 " at " 6 " Evening
New moon " 23 " at " 3 " morning
First Quarter " 30 " at " 12 " noon.

April 1734. Sun in ♉ Taurus.
Full moon " 7 " at 9 " Evening.
Last Quarter " 15 " at 6 " morning.
New moon " 22 " at 10 " morning.
First Quarter " 29 " at 5 " Evening.

May 1734. Sun in ♊ Gemini.
Full moon " 7 " at " 3 " morning
Last Quarter " 14 " at " 12 " noon.
New moon " 21 " at " 3 " Evening
First Quarter " 29 " at " 7 " morning.

June 1734 Sun in Cancer

Full moon „ 5 „ at „ 6 „ Evening

Last Quarter „ 13 „ at „ 4 „ morning

New moon „ 20 „ at „ 2 „ Evening

First Quarter „ 27 „ at „ 11 „ Evening

July 1734 Sun In Leo

Full moon „ 5 „ at „ 8 „ morning

Last Quarter „ 12 „ at „ 5 „ Evening

New moon „ 20 „ at „ 2 „ morning

First Quarter „ 27 „ at „ 12 „ Noon.

August 1734. Sun in Virgo.
Full moon " 3 " at " 9 " Evening.
Last Quarter " 11 " at " 6 " morning.
New moon " 18 " at " 3 " Evening.
First Quarter " 26 " at " 1 " morning.

September 1734. Sun in Libra.
Full moon " 2 " at " 10 " morning.
Last Quarter " 9 " at " 8 " Evening.
New moon " 17 " at " 2 " morning.
First Quarter " 24 " at " 6 " morning.

October 1734. Sun in Scorpio

Full moon „ 1 „ at „ 12. noon

Last Quarter „ 8 „ at „ 6 „ Evening

New moon „ 15 „ at „ 12 „ night.

First Quarter „ 23 „ at „ 9 „ morning

Full moon „ 30 „ at „ 7 „ Evening

November 1734 Sun Sedgittarius

Last Quarter „ 7 „ at „ 4 „ morning

New moon „ 14 „ at „ 1 „ Evening

First Quarter „ 21 „ at „ 10 „ Evening

Full moon „ 29 „ at „ 8 „ morning

December 1734 Sun in Capricorn
Last Quarter „ 6 „ at „ 5 „ Evening
New moon „ 14 „ at „ 2 „ Morning
First Quarter „ 21 „ at „ 11 „ morning
Full moon „ 28 „ at „ 8 „ Evening

Here endeth the Calculation
for the Change, Full, and Quart.s
of the moon for the Year 1734

Here beginneth the Calculation of the Ranges of ye moon &c. for the Year 1735 both Synodicall, and according to ye moon's mean motion as Followeth

Last Quarter „ 5 „ at „ 3 „ morning
New moon „ 12 „ at „ 1 „ Evening
First Quarter „ 19 „ at „ 10 „ Evening
Full moon „ 26 „ at „ 8 „ morning
January 1735 Sun in aquarius

February 1735 Sun in Pisces. ♓ ♓
Last Quarter " 2 " at " 5 " Evening ♓
New moon " 10 " at " 4 " morning ♓
First Quarter " 17 " at " 1 " Evening ♓
Full moon " 24 " at " 12 " night ♓ ♓

March 1735. Sun in Aries ♈ ♈ ♈ ♈
Last Quarter " 4 " at " 9 " morning
New moon " 11 " at " 8 " Evening
First Quarter " 19 " at " 0 " morning
Full moon " 27 " at " 10 " morning

April 1735. Sun in Taurus

Last Quarter „ 3 „ at „ 7 „ Evening
New moon „ 11 „ at „ 10 „ Evening
First Quarter „ 19 „ at „ 7 „ morning
Full moon „ 26 „ at „ 5 „ Evening

May 1735. Sun in Gemini

Last Quarter „ 3 „ at „ 3 „ morning
New moon „ 11 „ at „ 12 „ noon
First Quarter „ 19 „ at „ 10 „ Evening
Full moon „ 26 „ at „ 8 „ Morning

June 1735. Sun In Cancer.
Last Quarter 2 at 5 Evening
New moon 10 at 2 morning
First Quarter 17 at 12 noon
Full moon 24 at 9 Evening

July 1735. Sun In Leo.
Last Quarter 2 at 6 mornⁿ.
New moon 9 at 4 Evening
First Quarter 17 at 1 morning
Full moon 24 at 10 morning
Last Quarter 31 at 8 Evening

August 1735. Sun in Virgo

New moon „ 8 „ at „ 5 „ morning

First Quarter „ 16 „ at „ 2 „ Evening

Full moon „ 22 „ at „ 12 „ night

Last Quarter „ 30 „ at „ 9 „ morning

September 1735. Sun in Libra

New moon „ 6 „ at „ 6 „ Evening

First Quarter „ 13 „ at „ 9 „ Evening

Full moon „ 21 „ at „ 1 „ morning

Last Quarter „ 28 „ at „ 10 „ morning

October 1-35. Sun in Scorpio

New moon „ 5 „ at „ 1 „ Morning

First Quarter 12 at „ 10 „ Morning

Full moon „ 19 „ at „ 7 „ Evening

Last Quarter „ 27 „ at „ 4 „ morning

Novem^br. Sun in Sagittarius

New moon „ 3 „ at „ 2 „ Evening

First Quarter „ 10 „ at „ 11 „ Evening

Full moon „ 18 „ at „ 8 „ morning

Last Quarter „ 25 „ at „ 6 „ Evening

December 1735. Sun in Capricorn.

New moon " 3 " at " 8 " morning.
First Quarter " 10 " at " 12 " noon.
Full moon " 17 " at " 9 " Evening.
Last Quarter " 25 " at " 7 " morning.

Here Endeth the Calculation on the Change, Full & Quarters of the moon for ye Year 1735.

Here Beginneth the Synodical Calculation for the Change, Full and Quarters of the moon. A.D. 1736

January 1736. Sun in Aquarius

New moon „ 1 „ at „ 4 „ Evening
First Quarter „ 8 „ at „ 12 „ night
Full moon „ 16 „ at „ 10 „ morning
Last Quarter „ 23 „ at „ 8 „ Evening
New moon „ 31 „ at „ 5 „ morning

February 1736. Sun in Pisces.

First Quarter „ 7 „ at „ 2 „ Evening
Full moon „ 14 „ at „ 11 „ Evening
Last Quarter „ 22 „ at „ 8 „ morning
New moon „ 29 „ at „ 12 „ night.

March 1736. Sun in Aries.

First Quarter „ 8 „ at „ 9 „ morning
Full moon „ 16 „ at „ 10 „ Evening
Last Quarter „ 23 „ at „ 7 „ morning
New moon „ 30 „ at „ 12 „ night.

April 1736 Sun In Taurus.

First Quarter „ 7 „ at „ 9 „ morning.
Full moon „ 14 „ at „ 6 „ Evening.
Last Quarter „ 21 „ at „ 3 „ morning.
New moon „ 29 „ at „ 12 „ noon.

May 1736. Sun in Gemini.

First Quarter „ 6 „ at „ 9 „ Evening.
Full moon „ 14 „ at „ 6 „ morning.
Last Quarter „ 21 „ at „ 3 „ Evening.
New moon „ 28 „ at „ 12 „ night.

June 1736. Sun in Cancer

First Quarter 5 at 9 morning

Full moon 12 at 7 Evening

Last Quarter 20 at 5 morning

New moon 27 at 2 Evening

July 1736 Sun In Leo.

First Quarter 4 at 12 night

Full moon 12 at 9 morning

Last Quarter 19 at 6 Evening

New moon 27 at 4 morning

August 1736. Sun in Virgo
First Quarter 3 at 1 Evening
Full moon 10 at 10 Evening
Last Quarter 18 at 7 morning
New moon 25 at 4 Evening.

Septemb^r 1736. Sun in Libra
First Quarter 2 at 1 morning
Full moon 9 at 1 morning
Last Quarter 16 at 10 morning
New moon 23 at 8 Evening

October 1736. Sun in Scorpio

First Quarter „ 1 „ at „ 5 „ morning
Full moon „ 8 „ at „ 2 „ Evening
Last Quarter „ 15 „ at „ 12 „ night
New moon „ 23 „ at „ 9 „ morning
First Quarter „ 30 „ at „ 6 „ Evening

Novemb.r 1736. Sun in Sagittarius

Full moon „ 7 „ at „ 3 „ Morning
Last Quarter „ 14 „ at „ 12 „ noon.
New moon „ 21 „ at „ 9 „ Evening
First Quarter „ 29 „ at „ 7 „ morning

Decemb.r 1736. Sun in Capricorn.
Full moon „ 6 „ at „ 4 „ Evening
Last Quarter „ 14 „ at „ 1 „ morning
New moon „ 21 „ at „ 10 „ morning
First Quarter „ 28 „ at „ 8 „ Evening

Here Endeth the Calculation of the Change, Full, & Quarters of the moon for the year 1736.

Here beginneth the Change of the moon, Full, and Quarter, Calculated for the Year 1737

January 1737. Sun in Aquarius
Full moon „ 5 „ at „ 5 „ morning
Last Quarter „ 12 „ at „ 3 „ Evening
New moon „ 19 „ at „ 11 „ Evening
First Quarter „ 27 „ at „ 8 „ morning.

February 1737 Sun in Pisces.

Full moon „ 3 „ at „ 5 „ Evening.
Last Quarter „ 11 „ at „ 2 „ morning.
New moon . „ 18 „ at „ 2 „ Evening.
First Quarter „ 25 „ at „ 11 „ Evening.

March 1737 Sun in Aries.

Full moon „ 5 „ at „ 12 „ noon.
Last Quarter „ 12 „ at „ 9 „ Evening.
New moon „ 20 „ at „ 6 „ morning.
First Quarter „ 27 „ at „ 4 „ Evening.

April 1737 Sun In Taurus

Full moon „ 4 „ at „ 1 „ morning
Last Quarter „ 11 „ at „ 10 „ morning
New moon „ 18 „ at „ 8 „ Evening
First Quarter „ 26 „ at „ 3 „ morning

May 1737. Sun in Gemini

Full moon „ 3 „ at „ 2 „ Evening
Last Quarter „ 10 „ at „ 11 „ Evening
New moon „ 18 „ at „ 9 „ morning
First Quarter „ 25 „ at „ 6 „ Evening

June 1737. Sun in Cancer.
Full moon „ 2 „ at „ 3 „ morning
Last Quarter „ 9 „ at „ 12 „ noon
New moon . „ 16 „ at „ 9 „ Evening
First Quarter „ 24 „ at „ 7 „ morning

July 1737. Sun in Leo.
Full moon „ 1 „ at „ 4 „ Evening
Last Quarter . „ 9 „ at „ 1 „ morning
New moon . „ 16 „ at „ 10 „ morning
First Quarter „ 23 „ at „ 7 „ Evening
Full moon „ 31 „ at „ 4 „ Morning

August 1737. Sun in Virgo

Last Quarter „ 7 „ at „ 1 „ Evening
New moon „ 14 „ at „ 11 „ Evening
First Quarter „ 22 „ at „ 8 „ morning
Full moon „ 29 „ at „ 2 „ morning

September 1737. Sun in Libra.

Last Quarter „ 5 „ at „ 11 „ morning
New moon „ 12 „ at „ 8 „ Evening
First Quarter „ 20 „ at „ 6 „ morning
Full moon „ 27 „ at „ 3 „ Evening

October 1737 Sun in Scorpio
Last Quarter „ 3 „ at „ 12 „ night
New moon „ 11 „ at „ 9 „ morning
First Quarter „ 18 „ at „ 6 „ Evening
Full moon 26 at „ 3 „ morning

Novemb.r 1737. Sun in Sedgittar.s
Last Quarter „ 2 „ at „ 1 „ Evening
New moon „ 9 „ at „ 10 „ Evenin.
First Quart.r „ 17 „ at „ 7 „ morning
Full moon „ 24 „ at „ 4 „ Evening

Decemb.r 1737. Sunin Capricorn

Last Quarter „ 2 „ at „ 1 „ morning

New moon „ 9 „ at „ 10 „ morning

First Quarter 16 „ at „ 7 „ Evening

Full moon „ 24 „ at „ 4 „ morning

Last Quarter „ 31 „ at „ 2 „ Evening

Here Endeth the Calculation of the Change, Full, & Quart.rs of the moon for y.e Year 1737.—

Here beginneth the Calculⁿ for the Change, Full, & Quarters of the moon for ye. Year 1738

January 1738. Sun in Aquarius

New moon 7 at 12 Night

First Quarter 15 at 9 morning

Full moon 22 at 6 Evening

Last Quarter 29 at 4 morning

February 1738. Sun in Pisces

New moon „ 7 „ at „ 6 „ Evening

First Quarter „ 15 „ at „ 3 „ morning

Full moon „ 22 „ at „ 12 „ noon

Last Quarter „ 28 „ at „ 12 „ night

March 1738. Sun in Aries

New moon „ 8 „ at „ 9 „ morning

First Quarter „ 15 „ at „ 6 „ Evening

Full moon „ 23 „ at „ 4 „ morning

Last Quarter „ 30 „ at „ 2 „ Evening

April 1738. Sun in Taurus.

New moon 7 at 11 Evening

First Quarter 15 at 8 morning

Full moon 22 at 5 Evening

Last Quarter 30 at 2 morning

May 1738. Sun in Gemini

New moon 7 at 11 morning

First Quarter 14 at 8 Evening

Full moon 22 at 5 morning

Last Quarter 29 at 3 Evening

June Sun in Cancer, 1738

New moon " 6 " at " 12 " Night

First Quarter " 14 " at " 9 " morning

Full moon " 21 " at " 6 " Evening

Last Quarter " 29 " at " 4 " morning

July 1738 Sun in Leo.

New moon " 6 " at " 1 " Evening

First Quarter " 13 " at " 10 " Evening

Full moon " 21 " at " 7 " morning

Last Quarter " 28 " at " 4 " Evening

August 1738. Sun in Virgo

New moon " 4 " at " 9 " morning

First Quarter " 11 " at " 8 " Evening

Full moon " 19 " at " 3 " morning

Last Quarter " 26 " at " 12 " Noon

Septemb^r 1738. Sun in Libra

New moon " 2 " at " 9 " Evening

First Quarter " 10 " at " 8 " morning

Full moon " 17 " at " 3 " Evening

Last Quarter " 24 " at " 12 " Night

October 1738. Sun in Scorpio

New moon " 3 " at " 9 " morning
First Quarter " 10 " at " 8 " Evening
Full moon " 18 " at " 3 " morning
Last Quarter " 26 " at " 12 " Noon

Novemb^r 1738. Sun in Sedgitarius

New moon " 1 " at " 9 " Evening
First Quarter " 9 " at " 6 " morning
Full moon " 16 " at " 3 " Evening
Last Quarter " 24 " at " 12 " night

December 1738 Sun in Capricorn

New moon 1 at 9 morning

First Quarter 8 at 3 Evening

Full moon 16 at 3 morning

Last Quarter 23 at 1 Evening

New moon 30 at 10 Evening

Here ends the Calculation of the Change, Full, & Quarters of the moon for the Year 1738.

January 1739 Sun in Aquarius ♒
First Quarter " 6 " at " 7 " morning ☽
Full moon " 13 " at " 9 " Evening ☽
Last Quarter " 21 " at " 6 " morning ☽
New moon " 28 " at " 4 " morning ☽

February 1739 Sun in Pisces. ♓
First Quarter " 4 " at " 1 " morning ☽
Full moon " 11 " at " 10 " morning ☽
Last Quarter " 19 " at " 7 " Evening ☽
New moon " 26 " at " 5 " morning ☽

March 1739. Sun in Aries
First Quarter 5 at 2 morning
Full moon 13 at 11 morning
Last Quarter 20 at 8 Evening
New moon 28 at 5 morning

April 1739 Sun In Taurus
First Quarter 4 at 2 Evening
Full moon 11 at 11 Evening
Last Quarter 19 at 8 morning
New moon 26 at 5 Evening

May 1739. Sun in Gemini

First Quarter " 4 " at " 2 " morning

Full moon " 11 " at " 11 " morning

Last Quarter " 18 " at " 8 " Evening

New moon " 26 " at " 5 " morning

June 1739 Sun in Cancer.

First Quarter " 2 " at " 2 " Evening

Full moon " 9 " at " 11 " Evening

Last Quarter " 17 " at " 8 " morning

New moon " 24 " at " 6 " Evening

July 1739. Sun in Leo.

First Quarter 2 at 9 morning
Full moon 9 at 4 Evening
Last Quarter 17 at 1 morning
New moon 24 at 3 Evening
First Quarter 31 at 12 Night.

August 1739. Sun in Virgo

Full moon 8 at 9 morning
Last Quarter 15 at 6 Evening
New moon 23 at 3 morning
First Quarter 30 at Noon

September 1739. Sun In Libra.
Full moon - " 7 " at " 9 " Evening
Last Quarter " 15 " at " 6 " morning
New moon " 22 " at " 3 " Evening
First Quarter " 29 " at " 12 " Evening

October 1739. Sun in Scorpio
Full moon - " 7 " at " 9 " morning
Last Quarter - " 14 " at " 6 " Evening
New moon - " 22 " at " 8 " morning
First Quarter " 29 " at " 12 " Noon.

November 1739. Sun in Sagittarius

Full moon " 5 " at " 9 " Evening

Last Quarter " 13 " at " 6 " morning

New moon " 20 " at " 3 " Evening

First Quarter " 27 " at " 12 " Night

December 1739. Sun in Capricorn

Full moon " 5 " at " 9 " morning

Last Quarter " 12 " at " 6 " Evening

New moon " 19 " at " 8 " morning

First Quarter " 26 " at " 5 " Evening

Here Ends the Calculation of ye Synodical Change, and Quarters of the moon for the year 1739.

Here beginneth the Change, Full, and Quarters of the moon Calculated according to ye moon's mean motion through ye Zodiack for the year 1740.

January 1740 Sunin Aquarius

Last Quarter „ 2 „ at „ 5 „ morning
New moon „ 10 „ at „ 2 „ Evening
First Quarter „ 18 „ at „ 11 „ Evening
Full moon „ 25 „ at „ 8 „ morning

February 1740. Sunin Pisces

Last Quarter „ 1 „ at „ 2 „ Evening
New moon „ 8 „ at „ 11 „ Evening
First Quarter „ 16 „ at „ 8 „ morning
Full moon „ 23 „ at „ 5 „ Evening

March 1740. Sun in Aries

Full moon „ 2 „ at „ 2 „ morning
Last Quarter „ 9 „ at „ 11 „ morning
New moon „ 16 „ at „ 8 „ Evening
First Quarter „ 24 „ at „ 5 „ morning
Full moon „ 31 „ at „ 2 „ Evening

April 1740. Sun in Taurus.

Last Quarter „ 7 „ at „ 11 „ Evening
New moon „ 15 „ at „ 8 „ morning
First Quarter „ 22 „ at „ 5 „ Evening
Full moon „ 30 „ at „ 2 „ morning

May 1740. Sun Gemini. ♊

Last Quarter " 7 " at " 11 " morning

New moon " 14 " at " 8 " Evening

First Quarter " 22 " at " 4 " morning

Full moon " 29 " at " 1 " Evening

June 1740. Sun in Cancer. ♋

Last Quarter " 5 " at " 10 " Evening

New moon " 13 " at " 2 " morning

First Quarter " 20 " at " 11 " morning

Full moon " 27 " at " 8 " Evening

July 1740. Sun in Leo.

Last Quarter " 5 " at " 5 " morning
New moon " 12 " at " 2 " Evening
First Quarter " 19 " at " 11 " Evening
Full moon " 27 " at " 8 " morning

August 1740. Sun in Virgo.

Last Quarter " 3 " at " 5 " Evening
New moon " 11 " at " 2 " morning
First Quarter " 18 " at " 10 " morning
Full moon " 25 " at " 7 " Evening

Septemb^r. 1740. Sun in Libra

Last Quarter " 2 " at " 4 " morning
New moon " 9 " at " 1 " Evening
First Quarter " 16 " at " 10 " Evening
Full moon " 24 " at " 7 " Morning

Octob^r 1740 Sun In Scorpio

Last Quarter " 1 " at " 4 " Evening
New moon " 9 " at " 1 " morning
First Quarter " 16 " at " 10 " morning
Full moon " 23 " at " 7 " Evening
Last Quarter " 31 " at " 4 " morning

November 1740 Sun in Sagittar.
New moon „ 7 „ at „ 1 „ Evening
First Quarter „ 14 „ at „ 10 „ Evening
Full moon „ 22 „ at „ 7 „ morning
Last Quarter „ 29 „ at „ 4 „ Evening

Decemb.r 1740. Sun in Capricorn.
New moon „ 7 „ at „ 11 „ Evening
First Quarter „ 14 „ at „ 12 „ night
Full moon „ 21 „ at „ 10 „ Evening
Last Quarter „ 29 „ at „ 7 „ morning

Here Ends the Calculation of the Change, Full, and Quarters of the Moon, for 16 Years beginning with the year 1725, Ends at ye Year 1740.

Collected at his Majesties Royal Fort of Duncannon 1724. By the Honble Brigad^r Genl Pobl Steane Governour of the Said Fort.

Computation of Time.

att the beginning of Christianity the record in great Britain, as did all the other Subjects of the Roman Empire att that Time according to the then Roman Accounts; by the Year since the Building of Rome, by ye Consulls, or by the Years of the Reignes of the Emperours; afterwards In the Reigne of Constantine the first Christian Emperour) by Indictions, or Cycles of 15 Years.

all length in the Reign of Justi-
-nian the Emperor, 532 Years after
Christs incarnation (and not before)
all christians generally began
to account from the imputed
Year of Christs nativity, at wh.
time one Dionisius Exiguus, or
Abbas, a worthy Roman, had
finished a Cycle for ye Observat-
-ion of Easter, which was then
generally received, and is still
Observed by the Church of Engl.
the ground whereof is thus: —
The vernal Equinox at that
time was accounted to be the

Twenty first of march, and by
Consequence must be ye Earliest
full moon and then march the
Eight must be the earliest new
moon, and april the 18th must
be the latest Full moon, which
happening on a Sunday as it
will when the Dominical Lett.
is C. and the Golden numbr. 8th.
then Easter will be that Year
April the 25th. so when ye new
moon shall be on march the 2d.
as it will when the Dominical
Letter is D. and the Golden
number is 6. then Easter will be

Be on the 22d of march, as was in the year 1668. but the Romish Church inventing new Rules for finding of easter, it happens sometimes there Easter is full five weeks before ours, and sometimes with ours, but never after ours. For Pope Gregory the 13th in the year 1582 having Observed that upon an Exact account, the year contained above 365 days, not full 6. hours (as had been from the time of Julius Cæsar hitherto Reckoned) but only five hours,

46 minutes and 16 seconds; and this difference of almost Eleven minutes, in the space of about 134 years, makes one whole day, which being not considered since Regulation of Easter had brought back ye year att least 10 days, in so much that the vernal Equinox, which was on the 21st of march, was now on the 15th of march, by reason whereof two full moons pass between the Equinox and Easter, Contrary to ye primitive Institution thereof, which was

Was, that Easter should allways be observ'd on the Sunday following the first Full moon after the vernal Equinox.

Pope Gregory then having Observed these Inconveniencies, resolved at once to take away Ten days, and that out of the month of 8,ber: by Calling the 5th day thereof the 15th and that for that Year, those Festivalls which fell in those Ten dayes, which by Reason of the vintage Time were but few, Should be Celebrated upon the 15th 16th & 17th

Days of that month; and that the Equinox might never Retrocede for the future, it was then provided, that every 400 Three Bissextile years should be left out, that is in the years 1700. 1800. 1900. and so again in 2100. 2200, and 2300. leaving ye 4th 2000. to have its Bissextile and so every 400th year: the year in England according to the Cycles of the Sun, and moon and according to Almanacks, begins on the first of January; but the English Church begins the year from ye day of Christs

Incarnation, on the 25th of march which is also observed in Spain yet the Portuguese (as in divers countries in africa) begin their year on the 29th of august, the Venetians on the 21st of march according to the Epact; the Grecians on the longest day as the Old Romans did on the shortest day; which two last seems to have the most reason as beginning just at ye periodical day of the sun's returne. & the natural day consisting of 24 hours, is begun in England

England according to ye Custom of the Egyptions and ancient Romans at midnight and counted by 12 hours to mid-day, & again by twelve hours to mid-night, whereas in Italy, Bohemia, Poland, & some other Countries, their account is from sun setting, to 24 of the Clock, to ye next sun setting, & all Norembury, and Wittembery in Germany, according to ye old Jewish and Babylonian account they began at ye first hour after ye sun's rising to count one of the Clock, and so again att ye first hour

Hour after sun setting, but Astronomers accommodating their Calculations to the most noble time of the day, begin their accts from noon to noon, as doe still the Arabian's and others.

A Second Computation of Time

The Christians make their epocha the birth of Christ which happened in the year of the world 4000 but this reckoning they use not till the year 600 following, in the mean time the Civil account of the Empire, the mahometans begin their Hegira, or computation from the returne of their prophett to Mecha, after he was driven thence by the Philarcee, anno

Christ 617 the Greeians Reckoned by Olympaids the first of which is placed in the year of the world 3187 but this account Perished under the Constantinophinians Emperors then they reckoned by Indictions and every Indiction Containing 15 Years The first whereof was about the year of Christ 313. wch amongst Cronologers is still used. the Romans Reckoned first from the Building of their City which A. M. 3213. and afterwards from the Year, and 6th of his Reign Emperor Augustus, A. M. 3986

Which beginneth some what before our epocha from the birth of Christ this reckoning was used amongst the Spaniards till y. Reigne of Ferdinand the Catholick; the Jews had divers epochas as the Creation of the world in the beginning of time; Secondly from the General Deluge 1656 Thirdly from the confusion of Tongues, anno, 1786 Fourthly from Abraham's Journey out of Chaldea into Cannan anno 2021. Fifthly from the departure of the Children of Israel out of

Egypt

Egypt anno 2451. Sixthly from the year of Jubile anno, 2499 Seventhly from the building of Solomon's Temple anno, 2432 Eighthly the Captivity of Babylon anno 3357 the most usual reckoning in England, is only that of the worlds Creation, & Christs appearance in the flesh the first seldome used but by Chronologers and Historian's

Another authentick auth^r writes thus on the Computation of Time &c.

A Year is the Principal part of Time wherein the Sun Runs his Perambulation through the Twelve Sign's of the Zodiack Containing Twelve Solar months and Thirteen Lunar. 52 weeks, 365 Days 6, hours 6, minutes, which 6 hours in Four years Space being Added together make one Day;

Which which we commonly call Bissextile, or Leap Year and is added to the Kalender, on the 25 of February making that month every fourth year 29 days long, which at other times is but 28, & then the 28. and 29.th are accounted but one day, this account was thus named by Julius Cæsar the first Roman Emperour who Reduced the year to a better method then before, and from him it was called the Julian account: yet still the 6. minutes remaine un-numbred, which in that time arose to some days.

And therefore Gregory then Pope of Rome to make the year exactly answerable to the Sun's diurnal Course cutting up the dayes wh those minutes amounted unto placed his Festivals Exactly answerable to the Sun's prograss, which in Sixteen hundred years hath amounted to Ten-dayes and is from him called the Gregorian account, being used in all those parts beyond Sea which acknowledge the Popes Dominions.

How the Twelve months derive
there names.

January is so Called from Janus,
who was pictured with two Faces
signifying the begining or Enter
-ance of the year. February
took its name from Februa.
March from mars, God of war.
April signifieth the growth, or
Spring of the year. May is the
Majors. and June the Juniours
Season. July from Julius Cæsar.
August from Augustus ye Second
Roman Emperor. September
signifieth the Seventh month.

For the Romans before the time of Julius Cæsar Reckoned their months from March: So October signifieth the Eight month. So November signifieth the ninth month December the Tenth wch if you Reckon from January the account will be otherwise 30 days hath September, April June and November, February hath 28 alone, and all the rest hath Thirty and one, but every Leap year February hath 29.

On the day with Severall Divisions thereof.

an artificial day Consists of 12 hours, and a natural day Consists of 24 hours; they athenians began their day from Sun Sett. but the Jews Chaldeans & Babylonians from Sun riseing: the Egyptians and Romans from midnight of whom we took our pattern to Count the hours from thence. The umbricans from noon: the

Parts of the Solitick, or Civil day
according to Macrobius are these
the first time of the day is after
midnight: the Second in latin
Gallicinium the space between
the first Cock and break of the
day, the fourth Diuculum the
break or dawn of the day; the
fifth mane the morning; the Sixe-
-th meridies or the mid day, the
Seventh pomeridies or afternoon:
the Eight Serum diei Sun Sett,
the ninth Suprema Tempestas
Twy light, the Tenth vesper
the Evening; the Eleventh

Eleventh Prima Lux, Candle time: the Twelfth nox Concubia Bed time: the Thirteenth nox intempesta the dead time of the night. The Jews did divide their artificial day into four Quarters allowing to every Quarter Three hours, accounting the first hour of the first Quarter, at the rising of the Sun, and the third hour of the First Quarter, called the Third hour; and the Third hour of the second Quarter the called the ~~second~~ Sixth hour, which was mid-day; the third hour 2

Of the Third Quarter the ninth hour; and the Second hour of the fourth Quarter, the Eleventh hour and the Twelfth and last hour of the day the called that Eventide

But you are to observe that the day is accounted with us for Payments of money between Sun and Sun, but for Indictments of murther the day is accounted from midnight, to midnight and so likewise are fasting days.

In Weights, Called Troy and Averdupoize.

Of weights there are Two sorts used in England every where, viz, Troy weights & Averdupoize in Troy weight, 24 Grains of wheat make one pennyweight Sterling 20 pennyweight make one ounce; 12 ounces makes one pound Troy; So there are 480 grains in the ounce, and 5760 grains in one pound

By Troy weight is weighed Bread, Corn, Silver, Gold, Jewels, and Liquors: the apothecaries have the same pound, ounce, and graine and the Gold smiths likewise but they differ in their intermediate Divisions

The apothecaries reckon 20. grains makes one Scruple, 3. Scruples makes one Drum, 8. drams makes one ounce, and 12. ounces makes one pound. note that although the apothecaries make up their medicines by Troy weight they Buy their Drugges by Averdupoize weight.

The Goldsmiths reckon 24 grains make one penny weight 20 penny weight make one ounce and 12. ounces make one pound by averdupoise weight are all other things weighed, as mercery and Grocery wares, metals, wool, Tallow, and the like; which they account thus: 16. drams make an ounce, 16. ounces make one pound, 28. pounds makes one Quarter of an hundred, four Quarters makes one hundred, 20. hundred makes one Tunn. The Troy ounce is more than the

~~Troy Ounce~~ Averdupoize ounce for 51. ounces Troy, are equal to 56 ounces Averdupoise: but the Averdupoise pound is more than the Troy pound, for 14 pound Averdupoise weight are equal to 17. pound Troy weight. Note that Bakers who live in Corporation Townes make their Bread by Troy weight, but they who live not in Corporations are to make their Bread by Averdupoise weight, for free men are allowed Three pence In the Bushell more for

for Profitt than those that are not free, the free men Bakers when wheat is at five Shillings the Bushel there Bread must weigh Eleven ounces Troy weight the penny white Loafe.

On the River Nilus

The River Nilus its fountain is some what uncertaine whether in the mountain of the moon or the lake Zembre in Ethiopia Interior, but certain it is that it runs in a Continued Channel till it washeth the midland of Egypt having in the main space several Cataracts which is a great fall of the waters, that maketh such a hydious noise as not only deafeth the by dwellers

But the Hills also shake with ye
Sound as Lucan hath it. &c &c

Quaeque tremunt undis et multo
murmure montes,
Spumens invictis albescit fluctibus
amnis.
The noise the mountains shakes
who roar in spight,
So see the unvanquished way
vanquished waves white.

Before it takes its influx into the
Sea it divideth it self into seven
Channels, or mouths, the first is

Called Heracleoticum, the second
Bolveticum, the third Shanniticum
the fourth, Petinicum, ye fifth
Medesium, the sixth Canitieum,
the seventh Pebusiaeum, and it is
to be noted if the waters flow
fifteen Cubits high which is a
mean depth for ye production's
of the fruits of the earth; but if
less the earth is difficient; but if
it flow seventeen Cubits, it is then
as a drunken man, having its
Stomack as it were Overcharged,
that it cannot produce its natur-
-all opperations; that makes
Lucan give ye following verse.

Terra suis contenta bonis non
Indiguit mortis;
Aut Jovis, in sola tanta est
Fiducia Nilo.

The Earth's content with its own
wealth, doth Crave
No foreign mars nor Jove himself;
They have
Where hopes allone in nilus fruit-
full wave.

And whereas the Plague raigeth
here the first day of the Flood
in so much that in the City of
Cairo there dyeth five hundred
the day before; that day following

There dieth not one, it changeth the Colour of the sea further into the Mediterranean than the sea can be discerned and produceth a prodigious numbe of living Creatures and is likewise wonderfull Fruitfull accordingly.

On a Lake in Ethiopia.

A Lake in Ethiopia Superiour of which whosoever drinketh either falleth Imediatly mad, or is for a long troubled with a

Drowsiness. of which Ovid thus Recitetth.

Ethiopesque lacus quos liquis faucibus hausit
Aut furit aut patitur mirum gravolente soporem.

Thus in English.

Who doth not know the Ethiopian lake,
Whose waters he that drinks his thirst to slake,
Either groweth mad, or doth his soul oppress
With an unheard of drowsiness.

On the first Invention of Letters.

Cornelius Tacitus an approved Latin historian ascribeth it to the Egyptians, and his words are these.

Prima pro formas animalium Egypti.

and the Egyptians first of all Expressed the Conception of the mind by the shape of Beasts, & the most ancient monuments of

Mans memory, are seen Engrav^d
on stones, and the say they
were the first inventers of Letters;
then the phenecian Because they
were strong at Sea brought
them into Greece and so they
had the glory of that they rec-
-eived from others.
for it is recorded of Cadmus Sail^d
thither in a Phenecian Shipp
and was the first inventer of y^e
art amongst the Greecians, when
the were yet unexpert and rude
some record that Secrops the
athenian, or Livius ye Thebian.

And Palamedes the Grecian did find out sixteen Characters at ye time of the Trojan War, and that afterwards Simonides added the rest; but in Italy ye Etrurians Learned them, Demaratus the Corinthian, and the aborigines of Evander the Arcadian: thus far Tacitus.

But Lucan the Historical Poet attributes the first invention of them to the Phenecians in these Verses of his Pharsalia.

Phenices primi famae si creditur aut si mansuram rudibus voces signare figuris.

Phenicians first fame to us affords
Dar'd in rude characters engrave
our words.

Thus much of Tacitus & Lucan;
but no doubt but the Jews were
well skilled before either of them
and Saint Jude Insinuateth
into the writings of Enoch, and
Josephus saith that he writ
upon two Pillars before ye flood
one of Brick and the other of
stone, where was Engraven the
Two destructions of the world
the one by water, and the other
by fire.

Ovids distichs of the River Nilus. is as followeth.

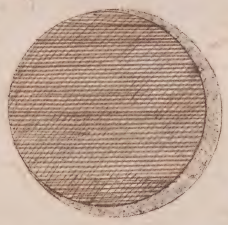
Namque ubi discernit madidas
Septemfluus agros.
Nilus et antiquo sua flumina
redidit alveo
Plurima cultores versis animalia
plebis inveniunt. —
For when the seven mouth'd
nile the fields forsakes
And to his ancient Channel
him betakes;

The Tillers of the ground lie
Creatures fine,
Of sundry shapes i'th mud that's
left behind.
This River is in length allmost
Three thousand miles sufficien-
tly famous all the world over.

The Collections written in this
Manuscript, Collected by the
Hon.ble Brigad.r Gen.l Stearne
at Duncannon Fort 1724.

The time of the beginning, middle, and end of the Eclipse, & of continuance of Darkness, together with its appearance at

Bristol and London



Afternoon	h. " m.	H. " M.
Begins	5 " 28	5 " 39
Middle	6 " 24	6 " 36
End	7 " 17	7 " 27
	m. " sec.	m. " sec.
Total Dark	3 " 30	0 " 0

A list of ye names of ye Principal places of England & Wales where it will be totally Dark, & the times of ye middle of total darkness at Each of them.

	H.	M.		H.	M.
Rochester	6	15	Exeter	6	23
Brecknock	6	19	Dorchester	6	26
Carmarthere	6	18	Sailsbury	6	29
Pembroke	6	15	Christ-Church	6	28
Monmouth	6	24	Oxford	6	30
Brewley	6	20	Southampton	6	30
Hereford	6	21	Isle of wight	6	31
Glocester	6	24	Winchester	6	30
Bath	6	24	Chichester	6	32
Wells	6	25	Farnham	6	31
Taunton	6	23	Reigeburg	6	30
Cirencester	6	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Tiverton	6	27	[illegible]	6	34
Tipmouth	6	20	Tunbridge	6	30

The Transit Terrestrium.

This Eclipse will not be total at London, but there will be a Shreud of light appear on the North side of the Sun, but it will be so very small, that not above one Sorty eight part of his Body will be seen; So that out of twelve parts, Eleven and three Quarters will be dark.
The Darkness will be so great, that some of the Planets and fixed Stars will be seen, more Especially Mars, venus, & mercury, may be seen all to the Eastward of the Sun;
Mercury will be the nearest to the Sun, about an hour and halfs motion from him, venus about as far to the Eastward of mercury; and mars again about as far to the Eastward of venus:
The bright Star Aldebaran may likewise be Seen very near the Sun, to the Eastward also:
And the great Dogy Star may be [illegible] nearer setting in the South west, and many other Stars will appear in [illegible] the Eclipse is total,
With Continuance if the air be Clear.

Black Munday

(490)

Or, an account of the great Eclipse of the Sun: which will be seen monday may the 11th in ye Evening 1724.

Being visible, total, & Central, in ye Kingdom of Ireland. the like not having happen'd these several Hundred years past.

Shewing the true time of ye begin.g middle & End, with its quantity and Duration as it will appear at Dublin:

Also ye names of those kingdoms and countrys, ye moons Transite In her Gen.l passage over ye Earth.

With the various events and Accidents; which in all probability is likely to succeed it. The auth^r Mr Isaac Butler Profess^r of Astronomy.

Astronomy is a Science which by Infallible Demonstrations, teacheth us how to measure the distance, magnitude, motions, and Appearances of the Celestial Bodies, the times, & Tipes of all Eclipses past, present, or to Come.

The ancients not well acquaint. with this sort of Learning, either through want of knowledge in numbers or good Instruments to make their Observations by, has left us but a very Imperfect Idea of their perfection in this science, it was sufficient for them, if they could tell ye day and Phase of an Eclipse, and such a person was esteem'd a great man amongst them: But that want of knowledge in the ancients has been well supplied in this age,

for by the Industry and care of our modern Authors, their great perfection in numbers, and true Mathematical Instrumental Enquiries, have brought those (once thought) Irregular motions of the moon, to a nearly wisht for certainty, It is by their excellent Tables (which are grounded on the Best Hypothesis that ever were Extant) we are made able of foretelling, not only the Day, but to a very great truth, the Hour and minute, of ye begining, midle, or end of any Eclipse.

their numbers agreeing so precise-
-ly to the meanders of that wand-
-ring Planet the moon, that they
seldom disagree from ye Celestial
Phenomena, which great Exact-
-ness in Lunar numbers, is wholly
owing to that Prince of
Astronomers the great Sr Isaac
Newton, whose wisdom and
Penetration in Philosophy and
And astronomy hath far exceeded
all the ancients, &c.
an Eclipse of the Sun is wolly
occasion'd by ye Interposition
of the moon,

Who being a dark & opaqueous body void of all light, hindreth our our light from seeing the Luminous face of the Sun, when=ever shee happeneth to bee in a proper position for it; so that it is the earth that is Eclipsed from the Sun's Rays, for he being the Source of all other Celestial lights, cannot loose any of his Lustre or brightness without a Miracle.

The Eclipse of the Sun (more properly the Earth) cannot happen but at a new moon,

Tho' not at every change, for y.
would be monthly, but only at
such times as the change happ-
-eneth to be in, or near y. north,
or south node of the moon, that
is when the Sun, moon, & Earth
shall be found in, (or near) one
Diametrical line, & then the
Eclipse will be seen somewhere
or other, for the moons Conelike
shadow, at that great Distance
being but small, Involves but a
few particular places in its entire
shadow, from thence it follows,
that in some places, on the

Terrestrial Globe, the Sun will appear to be entirely hid, n^{o} to others but one half, & a 3.d Part a small portion, thereof will be obscur'd, and to a 4.th not at all; yet it may so happen that all those Phases may appear under one, & the same meridian, but in Diferent Lattitudes.

Eclipses are not more Ordinary or extraordinary, than what has been, some few excepted, that is those that are called

Annular

Which are in themselves very uncommon, and reported by some authors Impossible that they should to happen, for the Learned Keplar writing to Clavius concerning an Eclipse that was Observed in Rome, on the 9th of April, ano, 1507. which was said to be annular: Observes to him that, that ring of light was no more than the Intercepted and broken Rays of the Sun, in y^e moons Atmos==phere, which appearing like a Ring of light,

gave occasion of its being called Annular. The learned Mr. Keile is of a different opinion; for in page 120 of his Astronomical Lectures, he has so well demonstrated the possibillity of annular Eclipses, that we have no further reason to doubt of their being such, or to depend what the Ancients have writt on this subject.

This Eclipse is very remarkable, tho' not annular, it being the greatest that has happened in

Ireland

There several hundred years past, and more in particular, for the Transite of the central Shadow over this kingdome, its Parrallel not recorded in History, For where the Central Shadow Crosses the kingdome of Ireland; as at Galway, Kilkenny and Wexford; the total continuance in darkness, being about four Minutes, the air their will become Cold and piercing, occasioned by the falling of those humid vapours which the attractive Rays of ye Sun kept up.

Birds and Beasts will retire
to their usual nightly abodes,
and the Star's will be seen, but
more particularly, Mars, venus,
and mercury; whose Accidentaly
and remoteness from ye Sun, will
give us the pleasure of beholeling
them: at first mercury will be
nearest to ye East of the Eclipse,
Then venus next, and to ye East n^d.
of them both is the Planet mars,
and all three not far distant
from each other, Aldebaran, and
many of the fixed Starrs, of ye first
magnitude may be seen if ye Air
be clear.

The central Shadow of the Moon first enters the earth; in the Lat. of 14 Degrees north, and Longitude 226 Degrees 50 Minutes, or miles North, whence it proceeds along the west Indian Ocean, & crosses over the Island of California Nova Granada, and to ye northward of the British Plantations, Nova Francia, and ye great River St. Laurence so traverseing the northern Sea to Europe, the Central Shadow enters Ireland at Galway, & proceeding thro' Kilkenny to the bay of Wexford

and having passed over the South west parts of England, entring France by Diepe, and so proceeds on by Paris, Troyes and Chalons, thence to Fryburgh and Bern in Switzerland; and so having passed over the north parts of Italy, it leaves the Earth in the mantuan territories. This Eclipse being the greatest that hath been seen in the Kingdom of Ireland during ye memory of the Oldest man living, exceeding that which happen'd on munday march the 9th 1652. commonly called black munday,

and greater than that of april
the 22d 1715 and in regard it falls
on munday may ye 11th may wth
more reason be called black mondy
than any that have as yet happend
tho' we in Dublin shall not be
involv'd in so great a darkness as
those who live under ye Centre
of the Shadow, for the line of the
Northern Limitt of the Shade,
passing so near us, as at the time
of greatest darkness to afford a
small glimmering of brightness on
the Northeast or upper edge of the
Sun's Body, which Rays of light,

Emerging thro' the moons Atmosphere will afford a pleasant prospect to the beholders, the Eclipse begins on the western edge of the Sun & ends on the East.

Therefore respecting ye meridian of Dublin the beginning is may the 11th. ~ ~ ~ ~ ~

	h " m " s
	6 " 11 " 26
Middle or greatt darkness ~	6 " 07 " 40
End & full recovery of light	7 " 00 " 50
Continuance in total darkness	0 " 00 " 57
And of ye whole Eclipse ~	1 " 49 " 24

Locu

Astrological Considerat-
-ions on this great Eclipse.

I shall not (to avoid prolixity) Insist on a needless Repetition, of the Opinions of all ye Learned authors, who have writen on this subject, but from a Due consideration of the Position and configurations of the Planets, at the moment of time of the greatest Obscuration, & according to the Rules of the great Ptolomy, give ye following (But concise) Judgment thereon.

at the middle time of greatest
darkness in the meridian of
Dublin, is found 12 Degrees of the
Celestial Scorpion ascending the
Horizon, with the latter end of
Leo in the mid-heaven, with virgo
Intercepted in y.e 10th, and mars
Lord of the first angle in y.e 9.th
In Opposition to Jupiter, who is
in the 3.d house, & mansion of
Envious Saturn, & both subtend,
from wh. Position 'tis easie to Conjec-
-ture, that there will be some
hellish Designs & contrivancies,
In Order to disturb y.e present

Peace and tranquillity of Europe
and as mercury is chief and
Principal Ruler of the Eclipse, &
in the 8th house, applying to an
Opposition of Saturn (which he
completes 16 days following the
Eclipse) will in all probability
augment ye foremention'd Evil,
but in a more obscure & secret
manner:
Authors assure us; that when
an eclipse of the Sun happens
in the airy & humane Triplicity
it presages famine and
Pestilential diseases, & fevers
of various kinds;

Arising from putrifaction of the Blood over heated; Distempers of the head, Frenzies, appoplexies, Giddiness & turning of ye Brain, and all maladies proceeding from heat & Dryness, &c.a & as it happens in the first face of Gemini, it Causeth Disention, strife & sedition, Neglect & contemp of ye Lawes of God & man, tumults, desperate designs & conspiracies, violent Commotions, &c.a Yet these sharp and bitter contentions, have certainly their rise & beginning from breach of Customs,

and religious pretences.
But alas! Religion in many
is but the foyle, self ends (next
to the decrees of divine providence)
being the only Incendiary &
sole cause in every mutation.
Mercury & Mars being the
Principal Rulers in this Eclipse
& no way beheld by ye benevolt
Rays of Jupiter or venus, will
produce many evils of ye worst
of kinds
as amongst men, the anger of
Princes towards their subjects
Murders Dueling Robberies factions
and Conspiracies

Conspiracies, sudden & violent Deaths.
In the air thunder & lightning, high & tempestous Dry winds, fiery Meteors, & Infectious Atoms.
On the Seas, loss and destruction of Shipping by winds & Pyracies.
But on the Earth, damage by Earthquakes, burning of houses, and prejudice to Trees & fruit, & want of water in those places more Immediately concerned.
The principal Kingdoms most lyable to the foremention'd Evils are Flanders, France Spain Italy, Denmark, Swedland & Muscovy, Bavaria, Bohemia

Turkey

Asia=minor, Persia, Egypt, and Barbary. the chief cities are Constantinople, Rome, Paris, Thoulose Lyons, Basil Hydelberg Frankfort, Prague, Hamberogh, Bremen, Lorain Bruges, &c. The Effects of this great Eclipse, will not begin to Opperate according to Ptolomy, until the latter end of december next, & will continue in force, very near two years from y^e Commencem^t thereof:

To conclude, God of his Infinite mercy grant, & protect our most Gracious Sovereign King George and all the Royal Family.

And preserve the great and popu=lous City of London, and rest of his majesties Dominions, from all imbred Divisions, and Contagions of any kind soever.

Amen.

N. B. the best way of observing Solar Eclipses (without Damage to ye Eyes) is to hold a piece of good Clean Crown Glass over a lighted Candle till it be well smoak'd or sooted over, & then putting the Clean side to ye Eye, ye whole Eclipse may be seen from the Begining to the End.

The write from ye Bath, that ye late great Eclipse of ye Sun was total there about 40 Minutes past 6 in the Evening; that after 2 minutes it grew light again, & not one Starr was visible.

An Extract of a Letter from Sorts=mouth dated May ye 12th 1724.

"The Eclipse of ye Sun that happen'd
"Yesterday, was total here about
"33 Minutes past 6. in ye Evening
"and ye Darkness continued 3
Minutes,

"But ye Skie being overcast, nothing
" could be observed about ye Sun or
" Moon, nor was there any Starr or
" Planet, except venus, visible.
" We were not far within ye northern
" Limitt of ye Shaddow, for, from
" our Tower, the Horizon towards
" the north & north East, was
" Enlighten'd while every other way
" It was under total Darkness.
" Do not pretend to ye greatest
" Exactness, but believe this is
" pretty near the truth."